Age
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The RUBBER AGE

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Late News of the Rubber Industry

Mail Order Tire Prices Reported To Be Reduced

THE next mail order catalogues to be issued by Montgomery Ward & Company and Sears, Roebuck & Company will be the mid-summer sale or "flyer" catalogues, designed to stimulate sales during the normally dull summer months. There have been rumors recently that these mail order houses have been planning to announce reductions in their prices on automobile tires in catalogues to be issued prior to the mid-summer "flyers." So far as can be learned, these rumors are without foundation.

A large number of merchandise items are normally reduced in price in the "flyer" catalogues, and it is probable that there will be some slight reduction made in tire prices. This reduction, if made, will be in line with former practices of reducing several merchandise items to increase summer sales volume and is not expected to influence the price schedules maintained by the leading tire producers.

American Rubber Consumption Reached 47,521 Tons in April

CONSUMPTION of crude rubber by manufacturers in the United States established a new high record last month, according to reports issued by the Rubber Manufacturers' Association, Inc. The total was 47,521 long tons, as compared with 44,730 tons for March, the previous peak month, and with 32,772 tons for the month of April, 1928.

The total absorption of crude rubber by domestic factories during the first four months of 1929, according to the monthly estimates of the Rubber Manufacturers' Association, has been 176,847 tons, as against only 136,565 tons for the months of January to April, 1928. Should this high rate be maintained through the year, it would result in a 1929 American consumption in excess of 530,000 tons.

Slackening down of tire factory schedules to follow the reduction in motor car production expected during the second half of the year will most likely decrease crude rubber absorption appreciably in months to come. THE RUBBER AGE has estimated the total consumption of crude rubber in the United States during 1929 at 485,000 tons, and this would mean an average monthly consumption from May to December of slightly more than 38,500 tons. As it has already been estimated in reliable quarters that May consumption will exceed that of April by about 2,500 tons, this average for the remainder of the year does not appear to be too high.

While stocks on hand in the United States have increased 7,122 tons during April, stocks afloat to this country have dropped 1,065 tons, leaving a net increase of 6,055 tons as of April 30. The total stocks on hand and afloat to this country were 163,068 tons at the end of April, as compared with 157,013 tons at the end of March and 147,069 tons at the end of April, 1928.

One of the principal reasons for believing that rubber consumption will not continue at the present tremendous volume is that manufacturers' and dealers' stocks of casings are now at the highest point in the history of the industry. At the end of March, manufacturers were figured to have approximately 16,351,000 casings on hand, while the average tire dealer, according to reports received by the Department of Commerce, held 94.4 casings on April 1.

Manhattan Rubber Company Combines With Raybestos

FORMAL announcement of the merger of the Manhattan Rubber Manufacturing Company, the Raybestos Company and the United States Asbestos Company was made on May 9, after a denial of a premature report by Manhattan officials. The merger, which will be carried out through an exchange of common stocks, will make the companies one of the principal factors in the brake lining, clutch facing and mechanical rubber goods field.

Negotiations for the consolidation were carried out by Sumner Simpson, president of the Raybestos Company; A. F. Townsend, president, and Henderson M. Green of the Manhattan Rubber Manufacturing Company; and S. R. Zimmerman, president of the United States Asbestos Company, with the co-operation of the banking firms of Hemphill, Noyes & Company, Hayden, Stone & Company and the Equitable Trust Company. Mr. Simpson will be the executive head of the new company.

The Manhattan Rubber Manufacturing Company has factories at Passaic and Whippany, N. J., and plantations in Java on which it grows 10 per cent of its crude rubber needs. In addition to manufacturing Hycoe moulded and hydraulic compressed brake lining, it is one of the largest producers of mechanical rubber goods in the world, its products including hose, belting, packing, moulded goods

and a wide variety of other items. The company was incorporated in 1893.

The Raybestos Company operates plants in Bridgeport, Conn., Peterborough, Canada, and Charleston, S. C. The report of the Raybestos Company and subsidiaries for the quarter ended March 31, 1929, showed a net profit of $415,429 after depreciation, federal taxes, etc., equivalent after dividend requirements on 8 per cent preferred stock, to $3.40 a share (par $25) earned on 118,672 shares of common stock. This compares with $224,298, or $1.78 a share in the first quarter of 1928. Foreign subsidiaries include the Canadian Raybestos Company, Ltd., and Raybestos-Belaco, Ltd., London, England.

The United States Asbestos Company maintains a factory at Mannheim, Pa.

Raybestos and Manhattan Rubber common stocks advanced sharply on the New York Curb Exchange on the prospects of the merger, but turned quiet after the formal announcement. Manhattan Rubber rose seven points in a single day from its 1929 low to a new high of 53, while Raybestos was well bought. The United States Asbestos common shares, which are usually inactive, failed to respond to the news in any way.

Goodyear Plans Airship Line From California to Hawaii

PRESIDENT HOOVER is to be asked to support plans developed by the Goodyear Tire & Rubber Company and the Goodyear-Zeppelin Corporation for establishing a dirigible air mail route from San Francisco to Hawaii, with a later extension to the Philippine Islands. P. W. Litchfield, president of the Goodyear organizations, conferred with Mr. Hoover at the White House earlier in the month and, while stating that he expected "to discuss air matters," would not divulge further the results of his conference. He was accompanied in his interview with Mr. Hoover by Congressman Francis Seiberling, a director of the Goodyear company, and by United States Senator Theodore E. Burton of Ohio.

Congressman Seiberling, Senator Burton and P. W. Litchfield leaving White House after conference with President Hoover

Previously, Mr. Litchfield and Commander Jerome C. Hunsaker, vice-president of the Goodyear-Zeppelin Corporation, had submitted their plans to Walter F. Brown, Postmaster General. Mr. Brown, it is understood, told the Goodyear executives that the Post Office Department, under present arrangements, has no authority to contract for air mail to be flown by dirigibles, although it may enter into contracts with heavier-than-air lines. In view of the cost, the Postmaster General believes that it would be necessary to get an appropriation from Congress before the plan could be put into effect.

Goodyear's proposal is admittedly tentative, and because of the routine which would be necessary before the federal government could extend aid to the enterprise, it is considered extremely doubtful that establishment of such a line in the near future can be anticipated. In his conference with the Postmaster General, Mr. Litchfield said his company was willing to build one or two dirigibles for the service if some form of operating program, which would amount to a government subsidy, could be arranged.

The cost of carrying mail between San Francisco and Hawaii is now about $150,000 yearly, but under the plan proposed it is estimated that the cost would mount to $2,000,000 or $3,000,000. The government would be asked to enter into a contract to pay $25 or $30 for each mile flown, and to encourage the carrying of mail by extending the same form of help that the Jones-White Act extends to the merchant marine.

Mr. Litchfield first expressed the possibility of such a service in an address before the members of the New York Bond Club on April 12. After discussing the various contributions of modern science and invention to the safety of dirigible travel, he asserted that one of the most ideal places to prove that these large ships are safe is the route from California to Hawaii.

"Wind and weather conditions are ideal for airship transportation," he declared, "and we feel it is perfectly safe and practical and will be profitable to run these ships, leaving California on Saturday night and reaching Honolulu on Monday and back to California by Wednesday night." In emphasizing the safety of the large airships such as Goodyear is building for the United States Navy, he pointed out that the Atlantic has been crossed five times by smaller, weaker and slower dirigibles.

Goodyear-Zeppelin officials are also said to have been considering the possibility of fast air mail service between New York and London by the use of dirigibles, which would also carry passengers. They believe that dirigibles could cut in half the time that it now takes steamships to make the trip.

British Dunlop Company Had 1928 Profit of $13,900,000

IN STRIKING contrast to the heavy losses suffered by most American rubber manufacturers, the Dunlop Rubber Company, Ltd., leading British company, has reported for the year ended December 31, 1928, a profit of £2,859,893, or approximately $13,900,000, after providing for depreciation and crediting trading account with £1,500,000 from general reserve in respect of losses consequent to removal of rubber restrictions.

After deduction of dividends on the preference shares of Dunlop Cotton Mills, Ltd., Dunlop Plantations, Ltd., and Dunlop Rubber Company of India, amounting to £309,750, interest on debenture stock and loans totaling £412,237, and preference dividends of £375,000, there was available a balance of £1,762,706 for the 23,353,046 common 6s 8d shares. Deduction of the common dividend of 25 per cent, or £1,540,209, leaves a credit of £222,697 to be carried forward.

This, together with the balance of December 31, 1927, of £578,580, makes a total carry forward of £801,277.

The Dunlop Plantations, Ltd., alone reported for the year ended October 31, 1928, net profit of £163,498 after charges. A dividend of 5 per cent was paid on the common shares.

At the thirtieth ordinary general meeting of the Dunlop Rubber Company, Ltd., held at the Hotel Cecil, London, on May 3, Sir Eric Geddes, the chairman, discussed the "abnormal situation" which arose last year upon the cancellation of restriction and forced the transfer of £1,500,000 from reserve. He predicted a bright future, declaring that 1928 sales showed an increase over the previous year, that Dunlop factories are working at a higher efficiency than ever before and that the company's plantations are producing rubber more cheaply than they have ever produced it, the present f. o. b. cost being 5d per pound.

While the American Dunlop factory at Buffalo, N. Y., did not show a profit in 1928, Sir Eric said, "We have the fullest confidence in its administration, which is at the very highest state of economy and efficiency. We have every reason to believe that the American company will show a reasonable profit this year." He also commented on the acquisition of control of the Dunlop Far East and Canadian companies last year. The report and accounts were unanimously adopted at the stockholders' meeting, and a resolution authorizing the issuance of new ordinary shares was approved.

Although the Dunlop Rubber Company report was favorable in view of the heavy losses sustained by American manufacturers, it was below the expectation of the London Stock Exchange. Dunlop ordinary shares, which sold well above 26s in January, are now quoted at about 20s, after having been even lower for a time.

Public is Offered Stock of I. B. Kleinert Rubber Company

A NEW issue of 54,400 shares of common stock, no par value, of the I. B. Kleinert Rubber Company was offered on May 20 by a group composed of Hallgarten & Co., Hayden, Stone & Co., and A. G. Becker & Co., priced at $40.50 a share. The offering represents in part the acquisition of holdings of individuals and in part the introduction of new money for working capital and other purposes, in order to aid the expansion of the business.

The company, which was started more than 50 years ago and was incorporated more than 21 years ago, is one of the leading manufacturers of soft rubber goods in the world. Its products comprise a wide range of articles, including dress shields, baby goods, sanitary lingerie, bath caps, girdles, hospital sheeting, tourist novelties, bath curtains, etc., while new products are constantly being added.

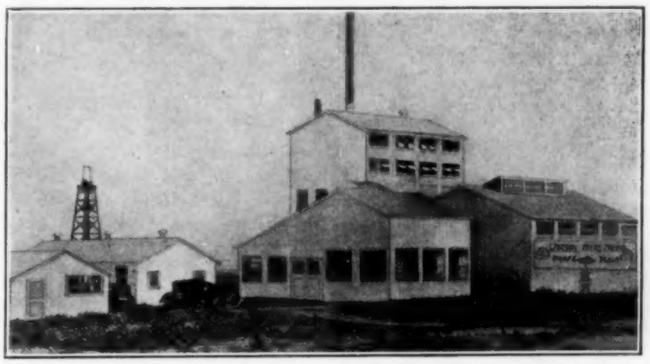
The business shows net earnings after all charges and federal income taxes, (omitting amortization of discount on the 6 per cent serial gold notes of the company amounting to $12,774 annually) of $726,954 for 1928, equivalent to $3.83 per share, as compared with $664,656 or $3.50 per share in 1927, and $523,628 or $2.76 a share in 1926. These figures include 4 per cent interest upon the net additional new funds provided by the present financing, the annual average of which is $34,816.

Upon completion of this financing, the authorized capitalization will consist of a closed issue of $500,000 6 per cent notes, due December 15, 1930-32, which is outstanding, and 500,000 shares of no par common stock, 190,000 shares of which will be outstanding. Quarterly dividends on the common stock will be inaugurated September 1 at the annual rate of $2.50 per share.

The consolidated balance sheet as of December 31, 1928, adjusted to give effect to the present financing, shows current assets of over $3,063,000 as compared with current liabilities of less than $543,000, a ratio of over 5.6 to 1.

Gastex Sales Taken Over By General Atlas Chemical Co.

ANNOUNCEMENT has been made that effective May 1, all sales of Gastex, the reinforcing pigment introduced late last year by the Grasselli Chemical Company, will be handled direct by its producers, the General Atlas Chemical Company, 60 Wall Street, New York City. This arrangement was made by a mutual and amicable agreement entered into with E. I. du Pont de Nemours, Inc., Wilmington, Del., which on March 1, 1929, absorbed the Grasselli Chemical Company. The du Pont policy is to handle only the products of its own manufacture or of which they control the manufacture.



Gastex Manufacturing Plant of the General Atlas Chemical Company at Pampa, Tex.

Gastex was developed and has been manufactured from the start by the General Atlas Chemical Company, which is owned and controlled by Henry L. Doherty & Co., New York City. Its plant is located at Pampa, Texas, and a research and development laboratory is maintained at Linden, N. J.

In connection with the plans of the General Atlas Chemical Company to immediately expand its facilities for serving the rubber industry, C. J. Wright, vice-president and general manager, has announced that Fred C. Batchellor, formerly of Ault & Wiborg Co., has been appointed sales manager and Dr. D. J. Beaver has been placed in charge of Gastex development and research. Mr. Batchellor has had contact with rubber factories for a number of years in the sale of colors and is well-known to rubber chemists throughout the industry. Dr. Beaver has done considerable development work on Gastex and has delivered several papers on reinforcing pigments at recent meetings of the Rubber Division, A. C. S.

According to its manufacturers, Gastex is a reinforcing pigment which does not retard the rate of cure and improves the ageing properties of rubber. It has a density of 0.384 and specific gravity of 1.82 compared to 0.2 and 1.76, respectively, for channel black.

Motor and Equipment Association Makes Aircraft Market Survey

WHAT the rapidly growing aircraft industry offers in the way of sales possibilities to the automotive equipment industry is shown in a survey of the aviation market recently completed by the Motor and Equipment Association, which includes several rubber manufacturers and wholesalers in its membership. The survey

shows that many wholesalers and about 350 automotive manufacturers in the association are already supplying either replacement or original equipment items to the aircraft market and points out further ways and means of serving the aviation industry generally.

The Motor and Equipment Association is enlarging and developing its credit department activities to accommodate the increased number of manufacturers co-operating. Credit information has been developed on aircraft, automotive, marine and radio accounts, and the foreign division of the credit department has grown rapidly.

The association will hold its annual show and convention in the Coliseum, Chicago, Ill., from November 4 to 9 this year, according to a recent decision of the executive committee. Plans are already being prepared for the show program.

Society for Testing Materials Will Convene at Atlantic City

PROVISIONAL programs have been arranged for all the sessions of the American Society for Testing Materials during the thirty-second annual meeting at Chalfonte-Haddon Hall, Atlantic City, N. J., from June 24 to 28. The general opening session will be held on the afternoon of June 25 at 2 o'clock, the first day being set aside for registration and certain committee meetings.

At 3 p. m. of the same day, the 25th, there will be a technical session at which the report of Committee D-13 on Textile Materials will be presented. Progress will be reported by this group in the work of its various sub-committees which has resulted in the development of new specifications for asbestos tape for electrical purposes and for chafer tire fabrics. This committee recommends the advancement to standard of specifications for light and medium cotton fabrics for asbestos yarns and for 25/5/3 carded American tire cord. It will present revisions of the method for identification of textile fibers and their determination in mixed goods. W. H. Whitcomb of the Henry L. Scott Company, Providence, R. I., is chairman of this committee.

Committee D-11 on Rubber Products will make its report at the same session. Revisions in the tentative methods of chemical analysis of rubber products will be presented, and progress will be reported in the work on abrasion testing, hardness testing, and life tests of rubber products. This committee, of which L. C. Conradi is chairman, is co-operating with the National Electric Light Association in the development of specifications for rubber gloves for electrical workers on apparatus or circuits not exceeding 8,000 volts to ground.

As a special feature of the Committee D-11 session, a paper will be presented by H. A. Depew and E. G. Snyder on "A Procedure for Testing Compounds That Must Withstand Repeated Compression, Such as Solid Tires." This paper describes the pounding of rubber cylinders 3¼ inches in height by 5 inches in diameter, with 2,500-pound blows struck three times per second. The method of vulcanizing the cylinders and the uniformity of the cure will be shown, together with the compounding data.

Committee D-9 on Electrical Insulating Materials, of which H. S. Vassar is chairman, will report progress at its session on June 27 on a considerable number of studies being made on insulating varnishes, molded and sheet insulating materials and liquid insulation. This group will recommend revision of the standard methods of testing molded insulating materials and will present revisions of four additional tentative standards.

Other features of the annual meeting will include an informal dance and smoker on the evening of June 26 and golf and tennis tournaments on the afternoon of the 28th.

United States Rubber Company Continues Planting Operations

F. B. DAVIS, Jr., president of the United States Rubber Company, has announced the intention of the company to continue planting operations on a moderate scale on its great rubber plantations in the Far East during the current year.

The company's holdings are in Sumatra and Malaya. The number of trees now totals more than 12,000,000 covering more than 140 square miles.

In the face of receding prices during the past few years, the company has held steadily to its program of increasing its planted area. One reason for this policy has been the rapid growth in the number of uses to which rubber is put in the everyday life of the world, and the company's conviction that this growth will increase rather than slacken.

Another reason is found in the fact that the company, through developing strains of super-yielding trees, and through economies, expects to reduce its cost of production each year. The plantation yield is large enough to supply only a part of the company's crude rubber needs, and the remainder is bought in the open market.

Goodyear Balloon Finishes Second in National Race

WITH three Goodyear Tire & Rubber Company airships attracting the attention of the entire population of Pittsburgh and surrounding communities at the start of the contest, the Goodyear VII rose from the University of Pittsburgh stadium on the afternoon of May 4 to travel a distance of approximately 456 miles, winning second place in the 1929 national elimination race for free balloons. The Goodyear VII, piloted by Ward T. Van Orman with the assistance of Alan L. MacCracken, landed at Keesville, N. Y., a few miles from Plattsburg, after having been in the air nearly a full day.

The race was won by the United States Navy entry No. 1, which traveled about 900 miles to reach Prince Edward Island, off the eastern coast of Canada. Third in the contest was the entry of the Detroit Times, which ended its voyage at Moose Lake, Essex County, N. Y. The pilots of this bag, landing in a spot remote from any sign of population, rowed completely around Moose Lake in a collapsible rubber boat before they could find guides to direct them to the nearest town. A second Akron entrant, that of the Akron Business Club, was caught in a tree only 50 miles from the starting point after a valiant attempt to steer a southward course by the pilots, C. A. Palmer and Walter Griffin, of the Goodyear-Zeppelin Corporation.

The Goodyear VII attracted a major share of the attention of both the crowd in the stadium and of the contestants themselves. Its snowy white surface presented a pleasant contrast to the drab outlines of several of the other entries, and the new lightning shield developed during the past year by Van Orman was closely inspected by the opposing balloonists.

Before the take-off for the race, the "Volunteer," new Goodyear dirigible, was christened by Mrs. William C. Young, wife of Goodyear's manager of aeronautical sales, with a bottle of liquid air. This ship is to be taken to California to be stationed at the Goodyear factory there with Karl Lange as pilot. The "Pilgrim" and the "Puritan," the other ships of the Goodyear dirigible fleet, also flew above the stadium at the start of the race.

Organizing for Plant Safety Work in Rubber Factories

Low Accident Rate Means An Increase in the Efficiency and the Morale of the Labor Force—Human Carelessness the Prime Fault

EVERY well organized and well managed rubber company interests itself in plant safety work as one of the fundamental essentials of good management. The maintenance of a low accident record and the minimum of lost time accidents is a goal which every rubber factory endeavors to reach not only on account of the financial gain which is realized but also on account of the greater efficiency and morale ingendered in its working force. But this goal cannot be reached by regarding safety work lightly or as a frill which is a nice thing to have. To obtain and maintain a low accident record requires organized safety work and a permanent program for carrying it on.

Practically all states have workingmen's compensation laws which require corporations employing more than a certain number of people to insure every employee against accident. The cost or rate of this insurance is determined first by a base manual rate for the particular industry, adjusted according to the degree of completeness which the equipment complies with established regulations, and to the cost of the particular company's accidents as determined by medical expense and claims paid for compensation. Thus each company makes its own rate, and it is to their interest to keep the cost of the insurance down by keeping the accident rate low.

Safety Devices on Machines Important

The first step toward safety is to make the physical plant and machinery as safe as possible. While the requirements of the various states vary somewhat as to the degree of stringency, there are certain recognized safety appliances which are in use everywhere. For example, all open gears, shafting, pulleys, etc., should be guarded. In the mill and calender room mills should be equipped with trip bars which automatically cut off the power, and the bite of calender rolls should have a bar to prevent the operator from getting caught. In addition they should be equipped with dynamic or mechanical brakes which stop the rolls within one third of a turn, thus assuring a quick stop if the rolls are running idle.

Elevators should be equipped with gates which when closed prevent the possibility of anyone falling into the shaft or being hit by a descending car. By installing contacts on these gates it is possible to prevent the operator from starting the car until the gate is fully closed.

Electrical wires, particularly high tension wires, should be properly insulated and enclosed in condulets. Plant housekeeping is very important for safety. Aisles should be kept clear, floors in repair, boxes and barrels with protruding nails should be avoided, and all dark spots illuminated at all times. Lockers should be provided for the worker's clothing, and workers should not be allowed to hang their coats and hats on or near machinery.

Proper mechanical aids for lifting should be provided as far as possible, and facilities for the storing of rolls and skids of rubber stock should be adequate. Fire exits should be plainly marked, fire extinguishers kept checked up and filled, and fire doors equipped with fusible links. Spreaders and cement making departments should be fitted with humidifiers.

These are some of the mechanical adjuncts necessary for a safe plant. But a plant can have all of these things, be up to the minute in equipment and machinery, and still have a bad safety record, because experience has shown that a far greater percentage of accidents has been caused by human carelessness than by faulty guarding of machinery. This brings the problem to the point where it must deal with something intangible, the human equation.

Organized Safety Work

Here is where organized safety work steps into the picture. A plant safety committee is organized, usually consisting of the major executives, the foremen, and a group of representative workers. This body functions as any organization holding regular meetings, with minutes kept by the secretary, and open discussions as to how to sell safety to the workers. Plant inspections from the viewpoint of safety are held regularly and reports submitted of hazards which need correction. Accidents which have occurred since the last meeting are taken up and discussed in detail as to how a mishap of that particular type can be avoided in the future. In other words every effort is made to get at the core of the problem.

Most insurance companies furnish publicity in the form of safety posters which are changed frequently, each one bearing a simple safety message designed to sell the worker on the safety idea. A worker who is safety conscious is continually on the alert not only to prevent injury to himself but also to see to it that his fellow workers are not injured. Accident records by departments are shown, and the employee is stimulated to keep his department record good. Safety rallies are held with speakers, and safety moving picture films are employed.

Still another function of safety work concerns the treatment and care of the injured, and the prevention of minor hurts from becoming major ones. Every plant has a first aid room or hospital where minor cuts and bruises can be treated, and workers are required to report any injury no matter how slight. Thus many cases of septic or blood poisoning are prevented. Some companies, in addition to having a plant hospital, equip each department with a first-aid kit so that piece workers will not have to lose time to get a small cut bandaged up.

As a matter of protection for the company against fraudulent claims and protection for the workers against being placed on a job for which he is not physically fit, many rubber companies now require a physical examination

before employment. This examination may be complete in every detail or only covering the major points such as heart, lungs, stomach and abdomen for ruptures, eyesight, and hearing. Thus workers who have physical defects which make them bad accident risks are detected before employment, and in some states, it is permissible to have them sign a waiver of compensation in case a particular physical defect should later cause an injury. Labor forces have been opposed to the physical examination in some instances, claiming that it discriminates against the older men. This is a problem which is becoming more and more acute in all industry, especially when men of advancing years and near the pension age, find themselves out of employment due to consolidations, mergers, and closing of individual plants. But there are jobs in every plant which can be filled very acceptably by older men. The only trouble is that employers are prone to reserve these positions for the faithful older employees of their own company, and are not so apt to hire older men from the outside for them.

Mechanical Aids Save Accidents

Mechanical aids such as electric hoists, electric trucks, and conveyors have not only helped to cut costs in industry, but also have performed an advance step in safety work. A large part of the lost time accidents in the rubber industry today are caused by ruptures and back strains, and mechanical lifters will help materially to reduce their number.

The National Safety Council through its subordinate councils has done some wonderful safety work in the rubber industry, as a result of which rubber executives have become more alive to the necessity of eliminating the great economic waste caused by accidents. War on all kinds of waste is being vigorously pursued in industry today, and safety work is a combat weapon which should not be overlooked.

Early Days in the Carbon Black Industry

THE romantic story of early days in the carbon black industry in the United States when the pioneers of the industry were moving into the strongholds of the mountaineers of West Virginia, has been graphically told by Godfrey L. Cabot, president of Godfrey L. Cabot, Inc., in the current issue of *Chemical Markets*.

It was in 1882 that Mr. Cabot first went out from Boston to the gas fields of western Pennsylvania to help build a new carbon black factory which was then being erected by his brother. Mr. Cabot's own story as told to William Haynes is as follows:

"My brother, Samuel Cabot had made lamp black from tar oils for several years when in 1882 he decided to manufacture for himself the then new gas black which was making quite a stir because of its superior qualities. He went out to western Pennsylvania and from Titusville as headquarters investigated several gas properties. In the end he purchased the fourth sand gasser known as William P. McCue—a well two years old, 1,450 feet deep, wasting at that time four million feet of gas daily. He paid $3,000 for the property, and the sellers were happier than boys with a kite. I would like to buy just such a well as that this very day, and I'd be ready to pay many times that original investment.

"We began construction of the plant at once, and I served as a sort of assistant general manager of the operations for the handsome salary of $125 a quarter.

"At that time the whole idea of natural gas was nebulous and uncertain. The general notion was that it was to be the fuel of the future, but nobody knew how or why. Such enterprising towns as Buffalo Mills, Craigsville and Worthington got their houses piped for gas—with ⅛-inch pipes! It sounds ludicrous now, but they worked at dangerously high pressures and had no control or regulators. In fact, my brother invented the first regulator we used and between us we worked out a mercury float valve.

Enters Business for Himself

"My brother's operation at Worthington did not, however, turn out very successfully. Absentee ownership and an incompetent superintendent combined to give me my opportunity, and in 1887 I bought my brother out.

"It was a poor time for a start, for a host of producers had been tempted into the business so that the price which was 35c a pound when we began in 1882 had dropped to 5c in 1888 when I struck out for myself. It could be demonstrated by simple mathematics that I must lose money since the price of the black was less than the cost of the gas it was made from. But as a matter of fact I always just managed to make a small profit.

"About two years before I first went out to Calhoun County—that was in 1899—I had bought wells of 17,000,000 cubic feet daily capacity for $20,000 which shows how cheap gas property then was. It was on the Little Kanawha River, and we used to ship out by boat. Thanks to low water in summer and ice in winter, we kept only the sketchiest of schedules—I remember one year when we did not move a pound from the first of July to the latter part of February. And now-a-days, Akron begins telegraphing short hasty messages if a shipment is three days late."

Novex—A New Accelerator

NOVEX, a new product of the Naugatuck Chemical Company, is offered as an accelerator that may be used in economical vulcanization at as low as 20 pounds steam pressure and which will handle easily in a factory and be suitable for goods of any color.

Chemically Novex is benzal bisdimethyldithiocarbamate. Its melting point is at about 175°C and specific gravity 1.365. The material is a fine white crystalline powder with no appreciable odor.

Novex mills into rubber readily and it is claimed that no migrating or blooming to the surface of uncured stock has been observed.

No toxic effect to workers has been found after a very extensive investigation. No effect has been noted on those who are identified with the manufacture of Novex or with its use in one very large footwear plant for several months.

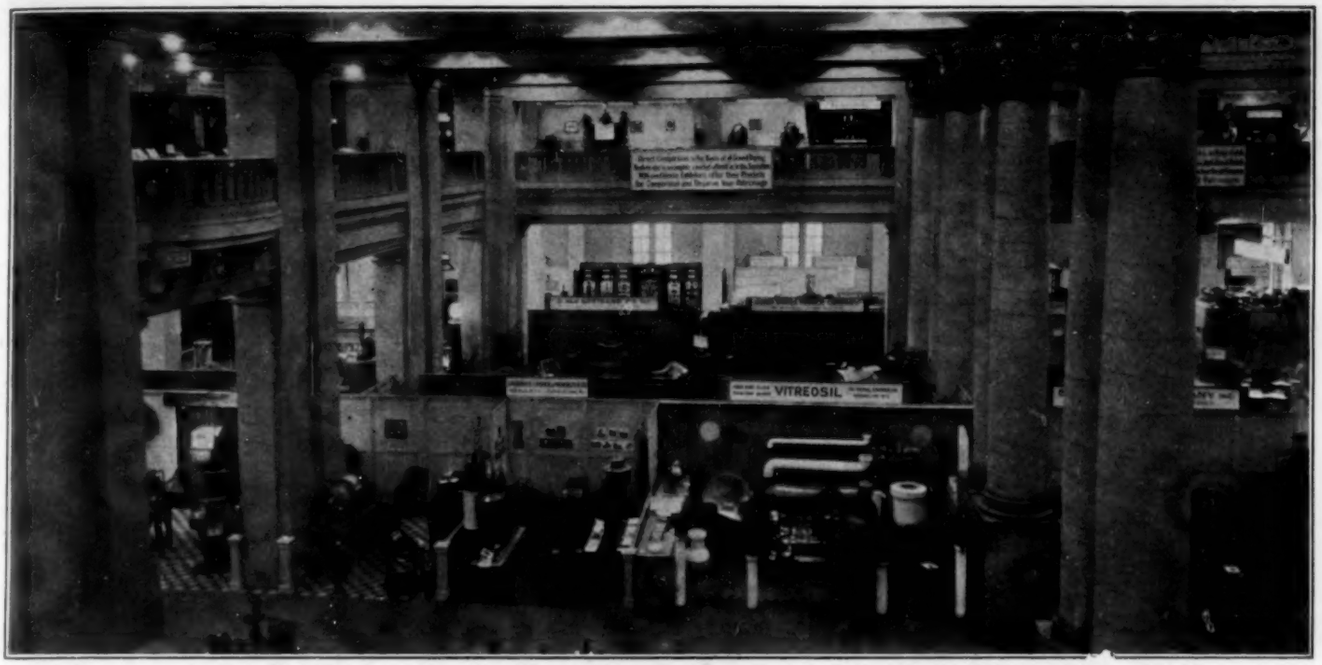
Novex is not retarded by carbon black, clay, antimony, pine tar, rosin, hardwood pitch or stearic acid. In fact, it is claimed that Novex gives stronger stocks when acidic softeners are employed.

In a tread stock with 3.25 sulphur, 4 or at the most 5 ounces of Novex on 100 of crude rubber is sufficient to give a good cure in 4 ply tires to 60′ at 25 or 30 pounds. In the gum stocks about 8 ounces would be required to cure with this tread.

In heater cured goods Novex is about 2/3 as strong as Monex. The preferred temperature range is 240° to 250°F.

In molded sundries, such as water bottles, excellent results have been obtained by using 0.7% Novex on the rubber with 2.25% sulphur for a cure of 10′ at 40 pounds.

Novex does not give cured stocks of as high modulus as DOTG or Monex. The stocks have a modulus more like that given by Trimene Base or Captax.



Advance in Chemical Engineering Shown at Exposition

Many Suppliers to the Rubber Industry Exhibit at Twelfth Exposition of Chemical Industries—Three Rubber Companies Also Have Booths

THE Twelfth Exposition of Chemical Industries at Grand Central Palace, New York City, during the week beginning May 6th, was the largest in point of view of exhibitions and attendance which has been held. The exhibits covered every phase of the chemical industry and included many which had a particular interest to the rubber industry. A few rubber manufacturing companies participated as exhibitors, showing chiefly the hard rubber equipment offered for chemical work and acid resisting rubber lined equipment for use in shipping as containers.

These exhibitions are becoming a feature in industry and are not alone clearing houses for the chemists and engineers in the sense of comparative value of the products, practices, and chemical engineering developments, but permit the prospective purchasers in the field to make direct comparisons of the products in which they are interested.

Among those companies which exhibited rubber products or chemicals or equipment of special interest to the rubber industry were the following:

THE AMERICAN HARD RUBBER COMPANY, New York City.—Emphasized new types of hard rubber equipment including a complete display of pumps in operation, rubber-lined tanks, rubber-lined pipe, and new rubber-lined gate valves.

BAKER PERKINS COMPANY, INC., Werner & Pfleiderer Division, New York City.—Exhibited their Class BB Universal mixing machine of latest improved construction, 100 gallons working capacity, equipped with motor and shown in operation. This machine featured roller bearings, a comparatively new characteristic for heavy duty mixers. It also displayed its Size 4 laboratory mixing machine.

BARCO MANUFACTURING COMPANY, Chicago, Ill.—Exhibited flexible joints and lubricated plug valves.

THE BROWN INSTRUMENT COMPANY, Philadelphia, Pa.—Exhibited indicating and recording pyrometers, indicating and recording flowmeters, recording thermometers and pressure gauges, duplex pressure and temperature recorders, strip chart recording thermometers, indicating resistance thermometer so sensitive as to operate when bulb is clasped in hand, strip chart recording resistance thermometer, Brown electric carbon dioxide meters in operation, intermediate- and low-range manometers, forged-steel manometers in various stages of construction, portable pyrometers and potentiometers, draft gages, thermocouples, protecting tubes, and automatic control valves. Special interest was manifested in the large 4-foot flowmeter showing the mechanism and workings of the inductance bridge principle which was demonstrated in operation at the booth.

BUFFALO FOUNDRY & MACHINE COMPANY, Buffalo, N. Y.—Displayed a 32 x 90-inch double drum drier complete with all auxiliaries. It is a complete self-contained unit equipped with variable speed transmission and direct-connected electric motor. One of the new model Buflovak flakers, gear-driven, equipped with a hood was also shown. This type of machine acts as a chilling roll and is widely used for flaking caustic soda, napthalene, etc.

FRED S. CARVER, New York City.—Had an exhibit of hydraulic presses and other mechanical devices, including a laboratory size press used in the rubber industry.

COOPER HEWITT ELECTRIC COMPANY, Hoboken, N. J.—Exhibited the Uviarc test cabinet used for testing dyes, fabrics, ink, paint, and other substances on which results of the action of sunlight are de-

sired. The Uviarc laboratory outfit is used for general laboratory research and commercial applications of ultra-violet light.

THE J. H. DAY COMPANY, Cincinnati, Ohio.—Exhibited Day Mogul mixing machines, type MDA, class 6, size 2½, working capacity 2½ gallons, mounted on structural steel bench and direct connected to 5 h. p. motor. The principal feature of this machine is interchangeability of agitators. Mogul mixing machine, type MDB, class 8, size 5, special vacuum construction, complete with 10 h. p. motor condenser receiver, and vacuum pump was also shown together with the Mogul mixing machine, type MDB, class 7, size 10, with working capacity of 10 gallons, complete with 15 h. p. motor. Midget three-roll mill on special steel bench complete with motor.

FOOTE BROS. GEAR & MACHINE CO., Chicago, Ill.—The exhibit consisted of a large variety of industrial gears and speed-reducing units, illustrating the modern tendency to replace open gears with enclosed self-contained speed-changing machines.

THE FOXBORO COMPANY, Foxboro, Mass.—The main item exhibited was the Foxboro duplex chromium-plating temperature controller in operation. The new steam flowmeter was also on display in operation. This instrument of the Foxboro 100-type orifice meter construction is one of the most accurate yet evolved for steam flow measurement. It reads direct and totalizes the steam flow as well. Recording and indicating thermometers and gages as well as tachometers and other Foxboro instruments were also exhibited.

THE FREAS THERMO-ELECTRIC COMPANY, Irvington, N. J.—Designing engineers and manufacturers of automatically-controlled constant-temperature thermo-electric devices, had on display a complete showing of their latest developments in laboratory ovens and driers, water and oil baths, thermostats, and small-sized industrial equipment.

ALFRED HAGUE & CO., INC., New York City.—Exhibited Rubalt acid-resistant, alkali-resistant, waterproof, and rustproof paint. Rubalt is a recently developed compound of bitumen, rubber, and solvent naphtha, which produces a coating that retains many of the excellent chemical characteristics of rubber. It is unusually inert and is capable of resisting to a surprising degree even strong acids such as nitric, as well as chlorine, sulfur, etc. Its ability to resist chemicals other than solvents is due to the practical absence of pores. Consequently it is also waterproof and has a high dielectric strength. It is somewhat self-healing, but will not flow.

THE LUZERNE RUBBER COMPANY, Trenton, N. J.—Exhibited a general line of hard-rubber equipment as applied to the chemical trade, particularly hard-rubber pipe and fittings, pumps, tanks, valves.

THE MINER LABORATORIES, Chicago, Ill.—Showed furfural products of interest to rubber manufacturers as well as to those engaged in certain specialty fields. Some of these have been available for several years, while others are just now being produced in commercial quantities.

THE MOTO METER COMPANY, INC., Long Island City, N. Y.—Exhibited indicating dial thermometers for industrial applications between the ranges of —40° and +750° F., both rigid stem and distance type, and indicating dial thermometers with electric contacts for remote alarm or remote control of electrical apparatus.

Upper Row: J. H. Day Co., Cincinnati, O.; Cooper-Hewitt Electric Co., Hoboken, N. J.; National Lead Co., New York, N. Y. Lower Row: Foote Bros. Gear & Machine Co., Chicago; Brown Instrument Co., Philadelphia; U. S. Rubber Co., New York.

NATIONAL LEAD COMPANY, New York City (Lined Products Division).—Had on display a United chemical hard-lead centrifugal acid pump in operation; chemical hard-lead and lead-lined flanged acid valves and accessories; United Tubond chemical lead-lined steel pipe; chemical lead-lined and covered flanged tank connection; and chemical lead-lined flanged and screwed fittings; homogeneous bonded chemical lead-covered steel heating coil; also a homogeneous chemical lead-lined jacketed steel tank.

THE PHILADELPHIA DRYING MACHINERY COMPANY, Philadelphia, Pa.—Driers for both laboratory use and quantity production were shown and illustrated, including driers of the truck, tray, and continuous conveyor types. The last mentioned are equipped with self-feeds and continuous conveyors. A noteworthy feature of Hurricane driers is the automatic temperature and humidity control, by means of which the most favorable drying conditions can be maintained precisely, without manual attention.

ROESSLER & HASSLACHER CHEMICAL COMPANY, New York City.—Had an attractive display featuring their general advertising campaign but did not exhibit any of their many specific chemical products.

STRUTHERS-WELLS COMPANY, Warren, Pa.—Exhibited a new type of inclined high velocity evaporator based on parallel flow

(*Concluded on Page* 205)

Rubber Industry Heads Toward New Records

First Quarter Questionnaire Reports of the Rubber Manufacturers Association Would Indicate Another Billion Dollar Year

THAT the rubber industry should make new records during 1929 from every angle of production, sales value and consumption of the crude commodity seems assured from the figures compiled by the Rubber Manufacturers Association, Inc., based on answers to its questionnaire covering the first three months of the year.

The estimated total sales value of shipments of all rubber products manufactured in the United States during the first quarter is $274,050,000, indicating that the full year of 1929 will again see a total well over a billion dollars in value. Of this amount, the estimated total sales value of shipments of tires and tire sundries (including bicycle and airplane tires) is $187,014,000.

Crude rubber consumed in the manufacture of all rubber products in the United States during the first three months of the year totaled 128,565 long tons. This figure is slightly below the total of the monthly estimates for January, February and March which aggregated 129,326 long tons, but far exceeds the first quarter consumption last year of 103,558 long tons. Of this total, 110,968 long tons went into the manufacture of tires and tire sundries.

The quarterly questionnaire answers have reduced the figures for visible stocks of rubber previously estimated for the end of March. The estimated stocks of crude rubber on hand in the United States, according to the quarterly report, was 100,115 long tons as against 100,536 long tons previously figured. The estimated amount of crude rubber afloat for the United States as of March 31 is now calculated at 54,038 long tons as compared with the previous figure of 56,476 long tons.

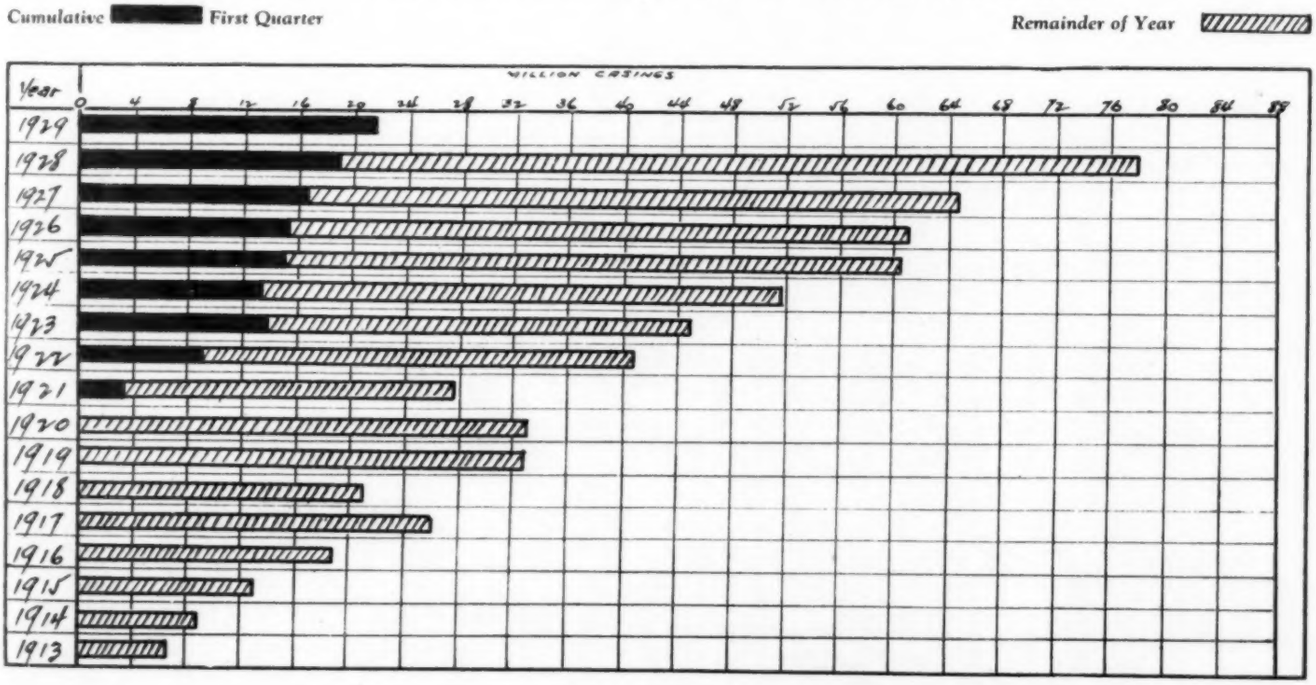
The total production of reclaimed rubber in the United States during the first quarter of 1929 is estimated at 57,582 long tons, and the total consumption of reclaim rubber at 60,113 long tons.

The Rubber Manufacturers Association has also compiled a table and a graphic chart to show the steady increase in production of pneumatic casings in the years from 1913 to 1928, indicating that there has been an annual rate of growth of 17.9 per cent. (compounded). Similar figures

Yearly Production of Pneumatic Casings. 1913-1928

Year	*Units*	*Per Cent of Increase or Decrease Over Previous Year*
1913	6,600,000	...
1914	9,000,000	36.4
1915	13,000,000	44.4
1916	19,000,000	46.1
1917	26,000,000	36.8
1918	21,000,000	—19.2
1919	32,835,509	56.3
1920	33,000,000	.5
1921	27,297,919	—17.2
1922	40,930,850	49.9
1923	45,258,580	10.6
1924	51,633,590	12.4
1925	60,844,420	17.9
1926	61,472,268	1.0
1927	64,441,748	4.8
1928	77,943,817	20.9

Production of Pneumatic Casings in the United States, 1913-1929



for casing production during the first three months of every year from 1921 to 1929 have been compiled as follows:

Year	Units	Per Cent of Increase
1921	3,160,748	....
1922	9,046,976	186.2
1923	13,614,644	50.4
1924	13,351,792	1.9*
1925	14,923,266	11.7
1926	15,042,112	.7
1927	16,338,053	8.6
1928	18,672,702	14.2
1929	21,083,742	12.9

*Decrease

The above figures, which are estimates for 100 per cent. of the American industry, represent an annual rate of growth of 26.8 per cent. (compounded). The figures shown in these tables for 1921 to 1929 inclusive are taken from the Rubber Association monthly reports representing 75 per cent. of the industry and are adjusted to 100 per cent. Data for previous years were obtained from various sources.

A British Pessimistic View

A. A. BAUMANN, who is one of the most well-known of British rubber plantation company chairmen, delivered a typically provocative address when he presided in London recently at the annual meeting of the Kapar Para Rubber Estates Co., Ltd.

"I order that you may estimate for yourselves, or rather appreciate, the blessings of the abandonment of restriction, I will creep back three years," he said. "In 1927 we paid a dividend of 15 per cent, with an average selling price of 1s. 5¼d. per lb. In 1926 we paid a dividend of 42½ per cent, with an average price of 1s. 10d. per lb. In 1925 the average price was 2s. 6d., and we paid a dividend of 45 per cent. I am an old restrictionist, because the plan of a central selling agency which I recommended before the War was only restriction in another form.

"I am not going to change opinions which I formed after 30 years' connection with the rubber industry at the bidding of a secret Treasury Committee, or even in deference to the inspired views of a City Editor. (*This refers to the anti-restriction campaign of the financial editor of the "Evening Standard" of London*). It seems only common sense that when a producer exceeds demands for his commodity, the only thing to be done is to curtail the supply. That is what we did for six years with admirable success, and I ask a plain question, to which I think I am entitled to an answer from the Secretary of State—namely, Who has benefited by the change which he forced upon us last year? Not the Americans, at whose instigation it has been suggested that change was made, for they lost a huge sum of money. Not the Dutch, although I think they deserve what they got for not coming into our system, for they also have lost very heavily; and certainly not the British rubber plantation industry, for our losses, both in capital and revenue have been enormous. I believe that the plantation industry has been sacrificed to a secret and sinister intrigue, although whether that intrigue was hatched in Wall Street or Downing Street or Lombard Street I have not yet discovered, although my nose is still on the slot of scandal.

"I am told by one or two chairmen, and also by the City correspondent of a well-known paper, that the rubber trade is in a healthier condition than it was a year ago. Well, I do not know what they mean by that, unless these gentlemen are votaries of a treatment now fashionable in nursing homes, which is called the starvation cure. The patient is put to bed for six weeks and fed on nothing but grape juice, and when he totters forth, pale and emaciated, the doctors and the nurses congratulate him on his improved health. Personally I prefer a high and generous diet. I was certainly healthier and happier when rubber was 2s. and when we were paying 40 per cent—much healthier than I am now that rubber is 10d. and we are paying 10 per cent dividend. I can only hope, although I cannot see any signs of it now, that this time next year we shall be in a less healthy but richer position."

"Power" Subject of Akron Group Meeting

NEARLY three hundred technologists, chemists and engineers from the Akron rubber district were in attendance at the spring meeting of the Akron Rubber Group of the American Chemical Society held Monday night, May 20, at Goodyear Theatre. The meeting was the first under the regime of the new group of officers headed by Chairman George K. Hinshaw of Goodyear.

"Power" was the general subject and speakers were R. J. Gaudy of the Sessions Engineering Company, Chicago, who discussed "Power Generation"; John Grotzinger of Goodyear on "Power Requirements for Rubber Factories"; and C. P. Crawford, Goodrich, on "Power Utilization in a Rubber Factory."

Plans for the coming year were outlined by Chairman Hinshaw and R. R. Jones, chairman of the program committee. In outlining the year's series, which will cover the general topic of "Engineering in the Rubber Industry," Mr. Jones pointed out that it was the policy of the group to endeavor to provide a program of general interest to production men, engineers and technologists. Hence the departure from the old order of programs.

"Power" was the first program under the new policy. A tentative outline for subsequent meetings, the second to be a feature of early fall, is as follows:

2.—Safety: (a) Characteristics of Inflammable Liquids; (b) Toxic Effect of Materials Used in the Rubber Industry.

3.—Tire and Mold Design.

4.—Rubber as a Material of Engineering.

Organization of the group is now fully complete, according to Mr. Hinshaw, who pointed out that success of future meetings was up to the group alone.

A large membership committee, headed by R. J. Bonstein, chairman, has been named to work with Chairman Hinshaw, Vice-Chairman K. D. Smith and Secretary-Treasurer C. W. Sanderson in the consummation of a membership drive. Lester W. Brock has been named chairman of the meetings committee, and C. R. Park is in charge of publicity.

Abstracts

Expansion of plants and the construction of new plants by Akron district rubber companies has brought up a new problem for the plant engineer, declared John Grotzinger, power engineering specialist for Goodyear in his paper on "Power Requirements of the Rubber Factory." Mr. Grotzinger discussed water, fuel and power requirements of the new plant. Power, he said, could be purchased in Canada for as low as 5 mills per kilowatt hour but the average cost of American power in industrial districts ranged between 8 and 12½ cents per kilowatt hour.

Mr. Grotzinger displayed interesting charts on water distribution and steam distribution, pointing out that the average factory producing 1,000 tires per day consumes approximately 510,000 gallons of water. Other charts touched on power distribution, electric power data and factory lighting with a mind to developing the highest efficiency from the workman.

"Power Generation" was the subject of a paper given by R. J. Gaudy of the Sessions Engineering Company, Chicago. Mr. Gaudy discussed the types of fuel in common use in factories, outlining the outstanding qualities of each. He also dwelt on the advantages of purchased power as against power generation by the individual factory. He particularly stressed the hope that the chemical and power men would work more closely together in the future.

"Power Utilization in the Rubber Plant" was the subject of a paper by C. P. Crawford of the B. F. Goodrich Company. Mr. Crawford traced development of power units from the date of the first calender used by Goodrich in 1898, which had a maximum capacity of 18-19 yards per minute, to the present calender with a capacity upwards of 40 yards per minute. He discussed power application to mills and dwelt on the types of motors necessary to the operation of tubing machines, conveyors, etc.

The New Association of the Rubber Industry

The Rubber Association of America and the Rubber Institute Fade into a New Organization Embracing Only Actual Manufacturers of Rubber Goods

THE Rubber Institute, Inc., was officially dissolved on May 10, by a vote of its membership and all of its activities were transferred to the newly designated Rubber Manufacturers Association, Inc., the new corporate name of the old Rubber Association of America, Inc. The same day witnessed the change in the name of the Rubber Association and a radical change in the constitution and by-laws of that organization.

The meeting for the dissolution of the Institute was without interest, only eight members being present and the voting on the resolutions being largely by proxy. While General Lincoln C. Andrews, the retiring director general of the Institute, declared that the dissolution was primarily in the interests of economy and efficiency and because of the overlapping of the two organizations, there is nothing in the plan of the new Rubber Manufacturers' Association to indicate that there is to be any merger of membership and the manufacturers who were not members of the old Rubber Association are still absent from the membership of the new Association. At the time General Andrews first proposed the dissolution of the Institute it was generally understood that the Rubber Association would also be dissolved and the entire membership of the two would be consolidated through the newly constituted Rubber Manufacturers Association.

The last meeting of the Rubber Association of America under that name occurred at the Hotel Plaza, May 10, the only business before the body being the change in corporate name and the changes in the constitution and by-laws. Action upon Mr. Rutherford's resolution making these changes was unanimous.

Changes in Membership

The important change in the character of membership from the old Association to the new organization is the outstanding feature of the new Association. Only actual manufacturers are eligible for membership and no reclaimers, crude rubber brokers or other affiliated interests can be elected as heretofore. Honorary membership is also prohibited. Election to membership will be by vote of the executive committee or the Board of Directors.

The same officers will continue to hold their respective offices under the Rubber Manufacturers Association as they did under the Rubber Association of America. The only change in the list of the officers and board of directors has been in the case of F. B. Davis, Jr., president of the United States Rubber Company, who was elected a director to succeed C. B. Seger, who resigned. The only addition to the Association's membership, so far reported, has been the Manhattan Rubber Manufacturing Company, of Passaic, N. J., which was elected on May 10.

Plans are already under way to increase the activities of the new Association and more office space has been arranged for. An increase in the office personnel is also contemplated.

The old offices of the Institute at 1776 Broadway, New York City, have been given up and the files removed to the new Association. General Andrews, who retires from all official connection with the rubber industry, has not made any announcement of his future plans but it is understood that he will engage in private financial business in Wall Street. At present he is spending a few weeks in Canada.

The new name of the Association marks the fourth time that the leading trade body of the manufacturing industry has changed its organization. The first effort of the leaders

(*Concluded on page* 205)

Officials of the Rubber Manufacturers' Association, Inc.

President—F. A. Seiberling, *Seiberling Rubber Company.*
1st Vice-President—Samuel Woolner, Jr., *Kelly-Springfield Tire Company.*
2nd Vice-President—A. B. Newhall, *Hood Rubber Company.*
General Manager—A. L. Viles.
Secretary—A. D. Kunze.
Treasurer—W. O. Cutter, *United States Rubber Company.*

Board of Directors

(Terms Expire 1930)

F. B. Davis, Jr., *United States Rubber Company.*
C. D. Garretson, *Electric Hose & Rubber Company.*
J. A. Lambert, *Acme Rubber Mfg. Company.*
William F. Pfeiffer, *Miller Rubber Company.*
Samuel Woolner, Jr., *Kelly-Springfield Tire Company.*

(Terms Expire 1931)

E. H. Broadwell, *Fisk Rubber Co.*
P. W. Litchfield, *Goodyear Tire & Rubber Company.*
H. L. McClaren, *Ajax Rubber Company, Inc.*
F. A. Seiberling, *Seiberling Rubber Company.*
E. S. Boyer, *American Hard Rubber Company.*

(Terms Expire 1932)

G. B. Dryden, *Dryden Rubber Company.*
E. B. Germain, *Dunlop Tire & Rubber Corporation.*
A. B. Newhall, *Hood Rubber Company.*
William O'Neil, *General Tire & Rubber Company.*
J. D. Tew, *The B. F. Goodrich Company.*

Tire Production at High Record

OUTPUT of pneumatic casings of all types by tire manufacturers in the United States reached a new record high figure of 7,519,234 during the month of March, according to estimates issued by the Rubber Manufacturers' Association, Inc. Shipments, while high at 6,708,134 casings, were below the record rate of last summer and, as a consequence, inventories rose to a new peak for the fourth time in successive months, totaling 16,351,750 casings. Stocks of balloon casings topped the 10,000,000-mark for the first time. Inventories of inner tubes, while high, have been exceeded in 1926 and 1927.

The figures for March, as released by the Rubber Manufacturers' Association, Inc., represent 75 per cent of the total industry in the United States and have been brought up to represent 100 per cent in the following table:

TIRE AND TUBE PRODUCTION
(All Figures Represent Thousands)

	February, 1929			March, 1929		
Pneumatic Casings:	Prod.	Ship.	Invent.	Prod.	Ship.	Invent.
All types	6,912	5,282	15,495	7,519	6,708	16,352
Balloon	5,062	3,969	9,963	5,639	5,152	10,478
High Pressure Cord	1,832	1,299	5,432	1,864	1,543	5,774
High Pressure Fabric	18	15	100	16	14	99
Solid & Cushion Tires	40	43	196	48	54	191
Inner Tubes:						
All types	6,769	5,278	16,999	7,466	6,738	17,750
Balloon	4,900	3,878	10,096	5,495	5,031	10,584
High Pressure	1,864	1,395	6,879	1,968	1,702	7,142

April Rim Output Marks New Peak

PRODUCTION of automobile and other rims during April set a new high record for the industry and brought the total for the first four months of 1929 to a figure nearly 1,100,000 higher than that recorded for the same period last year. During the past month the number of rims inspected and approved by the Tire and Rim Association of America, Inc., totaled 2,729,899 as compared with 2,613,389 in March, the previous high month, and 2,316,906 in April, 1928. The new 20 x 2.75 balloon size accounted for 25.3 per cent of the total production.

Rim Size	Apr. No.	1929 %	4 Mos. No.	1929 %
Motorcycle				
24x3 "CC"	1317	0.0	9038	0.1
24x3 Std.	—	—	4200	0.0
26x3 "CC"	527	0.0	1283	0.0
26x3 Std.	—	—	—	—
28x3 "CC"	—	—	1020	0.0
Total	1844	0.1	15541	0.2
Clincher				
30x3½	11496	0.4	112420	1.2
Total	11496	0.4	112420	1.2
18" Balloon				
18x 4	170699	6.3	500712	5.3
18x3.25	3442	0.1	55785	0.6
18x4½	50500	1.9	134921	1.4
18x5	2164	0.1	17387	0.2
Total	226805	8.3	708805	7.4
19" Balloon				
19x2.75	34486	1.3	147239	1.6
19x3½	97437	3.6	375785	4.0
19x4	598213	21.9	1984234	21.1
19x3.25	56646	2.1	121239	1.3
19x4½	63630	2.3	233160	2.5
19x5	402	0.0	35174	0.4
Total	850814	31.1	2896831	30.7
20" Balloon				
20x2.75	689292	25.3	2262867	24.0
20x3½	14665	0.5	56622	0.6
20x4	275898	10.1	1016884	10.8
20x4½	52377	1.9	186304	2.0
20x5	53743	2.0	185063	2.0
20x6	2563	0.1	34455	0.4
20x6.75	6184	0.2	11795	0.2
Total	1094722	40.1	3753990	39.8
21" Balloon				
21x2.75	9134	0.3	81777	0.9
21x3½	31448	1.2	123046	1.3
21x4	3517	0.1	28380	0.3
21x4½	3730	0.1	15195	0.2
21x5	1218	0.0	1761	0.0
21x6	—	—	1017	0.0
Total	49047	1.8	251176	2.7
22" Balloon				
22x4	—	—	501	0.0
Total	—	—	501	0.0
High Pressure				
30x3½-23	4662	0.2	10850	0.1
32x4½-23	1911	0.1	17996	0.2
32x4 -24	350	0.0	7166	0.1
34x4½-25	198	0.0	2080	0.0
Total	7121	0.3	38092	0.4
20" Truck				
30x5	373984	13.7	1289990	13.3
32x6	65465	2.4	185702	2.0
34x7	15340	0.6	60157	0.7
36x8	7165	0.3	48120	0.5
40x10	—	—	304	0.0
Total	461954	16.9	1584273	16.8
22" Truck				
36x7	859	0.0	1032	0.0
38x8	1635	0.1	2972	0.0
Total	2494	0.1	4004	0.0
24" Truck				
34x5	—	—	1804	0.0
36x6	4853	0.2	19607	0.2
38x7	8777	0.3	20037	0.2
40x8	7281	0.3	27952	0.3
44x10	—	—	246	0.0
Total	20911	0.8	69646	0.7
Airplane				
8x3 SS	54	0.0	200	0.0
12x3 SS	447	0.0	655	0.0
18x3 SS	465	0.0	494	0.0
16x3½ SS	10	0.0	964	0.0
20x3½ SS	464	0.0	601	0.0
20x4 SS	395	0.0	401	0.0
20x5 SS	—	—	211	0.0
20x6 SS	—	—	357	0.0
20x8 SS	—	—	396	0.0
24x10 SS	—	—	109	0.0
18x4 Cl.	856	0.0	3852	0.0
Total	2691	0.1	8240	0.1
GRAND TOTAL	2,729,899		9,443,519	

Schaphorst's CHATS *with the* ENGINEER

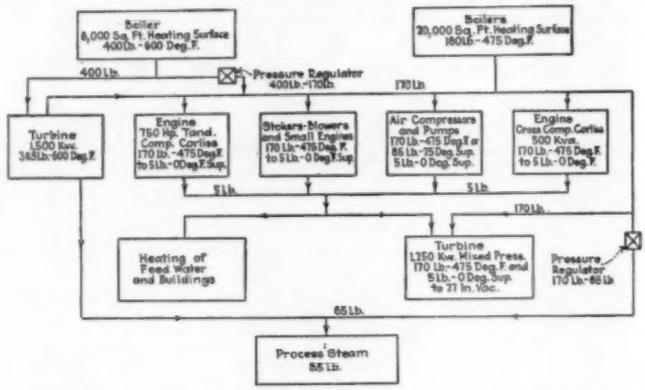
By W. F. SCHAPHORST, M.E.

Cheap Power in Rubber Plant

THERE was an interesting article in the March 26th number of *Power,* written by K. W. Karlson, Chief Engineer of the Ajax Rubber Company, entitled, "High Pressure Turbine Furnishes Cheap Power in Ajax Rubber Plant." He states that it is a remodeled plant in which there is a new boiler carrying a pressure of 425 lb. per sq. in. and a 1500 kw. steam turbine bleeding at 170 lb. to the station header and exhausting at 85 lb. to process. This makes possible a power cost per kilowatt hour ranging from 0.663c at one third capacity to 0.358c at full load. The control system provides adjustable constant flow to the turbine throttle. The process steam is under back-pressure control.

Mr. Karlson states that although the power costs are already low, they will become still lower.

Herewith is a reproduction of the steam flow diagram for the entire plant. This diagram shows how the steam



starts from the new boilers, going into the 400 lb. pressure line to the steam turbine and how steam is bled from the turbine into the main steam line with which the older boilers are connected. The old boilers operate at 180 pounds. As will be noted the new boiler operates at 400 lbs. and 600° F. whereas the old boilers operate at 180 lbs. and 4750° F.

Boiler Corrosion

WHEN boiler corrosion is BELOW the water line it generally indicates that acid is contained in the water. And when the corrosion is ABOVE the water line it usually indicates that the water contains considerable air.

A method recommended for preventing corrosion is this: cover the surface of the boiler both above and below the water line with a thin lime coat. Soda ash in small quantities introduced in the feed water may also be helpful.

Preferably though, if corrosion is considerable—put your problems in the hands of unbiased consulting feed water specialists. Probably you need a deconcentrator. Probably a deaerator. Probably boiler compound will suffice. Or a hot process softener. Or the much used "salt system." There is only one BEST way in which to solve a given problem of corrosion, or a given problem of boiler scale.

RUBBER CHEMISTRY and Technology

An Attempt at a Rational Classification of the Principal Accelerators of Vulcanization*

By G. MARTIN AND R. THIOLLET

AT the present time there are many accelerators on the market for the vulcanization of rubber, but it is often difficult to choose among them those best suited for a required purpose.

Accelerators are ofte nclassed as slow, medium, rapid and ultra-rapid. These brief terms are entirely unsatisfactory for characterizing clearly the properties of these products, and it frequently happens that two accelerators which have been placed together in one class behave in reality in very different ways and are not entirely replaceable one by the other.

The object of this study is to establish a rational classification of the principal accelerators of vulcanization, which is based not only on their activity but also on their other important characteristics.

The following points will be considered in their order:

(1) The time required for the *fixation* of mixtures at different temperatures.
(2) The time required to bring about vulcanization giving the maxima mechanical properties at different temperatures.
(3) Aging.
(4) These three points of view will be completed by a study of the plasticizing power and of the influence of different charges on the action of the accelerators.

A Study of the Time Required for the Fixation of Mixtures at Different Temperature

The experiments were made on the following type mixture:

Pale Crepe	100
ZnO	5
Palm Oil	1
Stearic Acid	0.5
Accelerator	...
Sulfur	...

The proportions of sulfur and of accelerator used correspond to those commonly used in industrial practice. All the mixtures were prepared from a single master batch, the accelerator and sulfur being incorporated last, in approximately equal lengths of time and at temperatures at which vulcanization does not take place.

Accelerator	Parts of accelerator per 100 parts of rubber	Parts of sulfur per 100 parts of rubber
Zinc isopropylxanthate	2.0	2.0
Tetramethyldisulfide	0.4	1.8
Zinc methylphenyldithiocarbamate	0.7	1.8
Mercaptobenzothiazole	0.7	2.5
Diphenylguanidine	0.7	3.0
Di-*o*-tolylguanidine	0.6	3.0
Phenyltolylxylylguanidine	0.6	3.0
Ethylidene-aniline	1.0	3.5
p-Nitrosodimethylaniline	1.0	3.5
Thiocarbanilide	2.0	4.0
Anhydroformaldehyde-*p*-toluidine	1.0	3.5
Triphenylguanidine	1.0	3.5
Anhydroformaldehyde-aniline	2.0	4.0

*Translated from Le Caoutchouc & la Gutta-Percha, Vol. 26, No. 302, pages 14494-7, April 15, 1929.

Determination of the Points of Fixation

The mixture to be studied was placed in small aluminum molds and press-cured. The molds were taken out every ten minutes and the mixture examined immediately.

It was confirmed that the mixture (2 mm. thick) reached the temperature of the platens in about one minute, the temperature of the platens being controlled by means of a thermometer.

Cures of 10, 20, 30, 40, 50 and 60 minutes were first made at a known temperature. In general when a cure gave a definitely fixed mixture, a cure of 10 minutes less gave a product which had not been fixed. Cures were then made 2, 4, 6 and 8 minutes longer than the lower of these two cures, which permitted the time of fixation to be located within two minutes. For very rapid fixations these cures were repeated at 1 minute intervals.

By this method the time of fixation was determined with an error of

± 30 sec. to ± 1 min. for very rapid fixations.
± 2 min. for fixations requiring a cure of 20-30 min.
± 5 min. for slow fixations requiring a cure of about one hour.

Characteristics of the Point of Fixation

A mixture was considered *fixed* when it has the following properties:

(1) The mixture, without being vulcanized, can be removed from the mold easily. It does not stick to the surfaces and no longer distorts when removed from the mold.
(2) Cut, it can be again united.
(3) A little before the point of fixation the mixture softens when carried quickly to a higher temperature. A little beyond the point of fixation the mixture acquires more nerve when brought quickly to a higher temperature.

The point of fixation thus determined corresponds to that where a mixture will be scorched during milling or in the tube machine.

The determination of the time required for fixation permits the choice from among the list of accelerators of those which will give the greatest safety and will behave best under the conditions required.

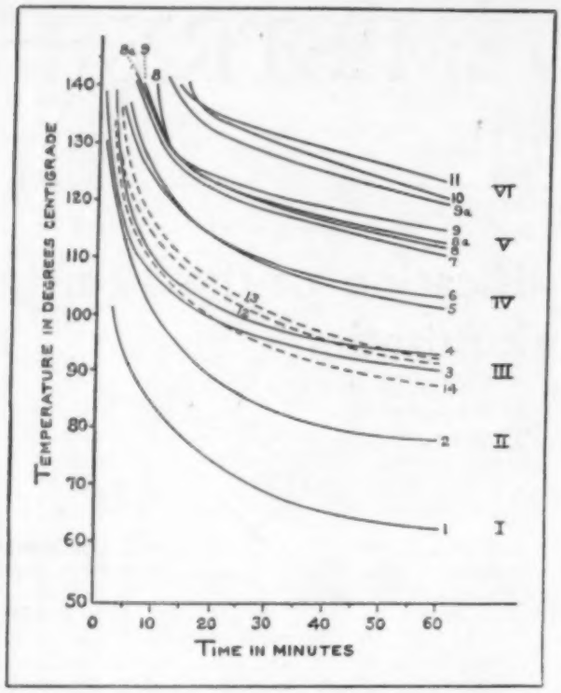
Representative Curves

By plotting on the two axes of rectangular coördinates the temperatures as ordinate and the corresponding times of fixation as abscissa, there was obtained a series of curves which show each accelerator according to its rate of fixation of mixtures (see graph).

It should be observed that the accelerators form a very complete range, the curves being spread out regularly over the surfaces bounded by the axes.

The accelerators fall into six groups:

I. Zinc isopropylxanthate.
II. Zinc methylyhenyldithiocarbamate.
III. Thiocarbanilide, ethylidene-aniline.
IV. Mercaptobenzothiazole, tetramethylthiuramdisulfide.



Representative Curves of Variations of the Times of Fixation as a Function of the Temperatures

1. Zinc isopropylxanthate.
2. Zinc methylphenyldithiocarbamate.
3. Thiocarbanilide.
4. Ethylidene-aniline.
5. Mercaptobenzothiazole.
6. Tetramethylthiuramdisulfide.
7. Phenyltolylxylylguanidine.
8. Diphenylguanidine.
8a. *p*-Nitrosodimethylaniline.
9. Di-*o*-tolylguanidine.
9a. Anhydroformaldehyde-*p*-toluidine.
10. Anhydroformaldehyde-aniline.
11. Triphenylguanidine.
13. Zinc methylphenyldithiocarbamate + anhydroformaldehyde-aniline.
13. Mercaptobenzothiazole + diphenylguanidine.
14. Mercaptobenzothiazole + ethylidene-aniline.

V. Disubstituted guanidines, *p*-nitrosodimethylaniline.
VI. Triphenylguanidine, anhydroformaldehyde-aniline, anhydroformaldehyde-*p*-toluidine.

The products within the first group give very rapid fixations, even at low temperatures.

Those of the second group give a little slower fixations and can, with certain precautions, be used in milling operations.

Those of the third, fourth and fifth groups cause fixations still less easily and are still safer to use. It should be observed, however, that tetramethylthiuramdisulfide which, based only on its rapidity of fixation, is classed in the fourth group, causes extremely rapid vulcanization as soon as this once begins. It produces what might be termed an "explosive vulcanization." Scorching is therefore more serious with this product than with an accelerator which causes a more progressive vulcanization.

The accelerators of the sixth group cause fixation only at very high temperatures. Their use is advisable whenever the mixture must remain for a long time at a high temperature, for example in a tube machine.

These results show that for each accelerator an index number, ranging from 1 to 6, can be given which will represent its *rapidity of fixation*, or its *"precocity of action."*

This study emphasizes the essential differences which may exist between two accelerators which are often considered to be part of a single group.

It is in this way that triphenylguanidine and thiocarbanilide, although bringing about vulcanization in equal periods of time, differ essentially by their precocity of action. The case of diphenylguanidine and ethylidene-aniline is similar.

The Effect of the Simultaneous Use of Two Accelerators

It was also considered desirable to show how it is possible to use different accelerators in conjunction with one another and thus obtain different effects. The experiments were made on the type mixture and under the conditions described above.

The proportions of accelerators and of sulfur were as follows.

Accelerator	Parts of accelerator per 100 parts of rubber	Parts of sulfur per 100 parts of rubber
Mercaptobenzothiazole	0.3	2.5
Ethylidene-aniline	0.45	
Mercaptobenzothiazole	0.3	2.5
Diphenylguanidine	0.4	
Zinc methylphenyldithiocarbamate	0.7	1.8
Anhydroformaldehye-aniline	1.0	

These tests show that *it is possible by a combination of accelerators to obtain a new accelerator of vulcanization whose properties are entirely different from those of its components.*

For example, the diagrams show that:

A mixture containing 3% sulfur and 0.7% diphenylguanidine is not fixed at 105°.

A mixture containing 2.5% sulfur and 0.7% mercaptobenzothiazole is fixed in 45 min. at 105°

But a mixture containing 0.3% mercaptobenzothiazole and 0.4% diphenylguanidine with 2.5% sulfur is fixed in only 23 min. at 105°

The mixture of these accelerators is more precocious than each of its components.

In other cases, on the other hand, *it is possible to retard the precocity of action of rapid accelerators by combining with them another accelerator.* For example: a mixture containing 1.8% sulfur and 0.7% zinc methylphenyldithiocarbamate is fixed in about 10 min. at 100° If to the same mixture 1% anhydroformaldehyde-aniline is added, fixation occurs in about 30 min. at 100°.

These two examples, which can be easily multiplied, give an idea of the importance of a systematic study of mixtures of accelerators. Such a study will allow the finding of the exact degree of acceleration which should be given to each mixture, according to the particular conditions under which it is used.

These first tests lead to the following conclusions:

The choice of the use of an accelerator should be determined not only by the activity, but also by its precocity of action. An examination of the curves accompanying this article will give information on this subject.

It should be understood that this study applies only to the mixture specified at the beginning of this article and that the introduction of other ingredients is likely to change these phenomena. Nevertheless it has been thought that some rubber technologists would be interested in the results obtained with a somewhat theoretical mixture and that they would find it of some interest to apply to their industrial mixtures the method adopted here.

Witco Softener No. 20

WISHNICK-TUMPEER, Inc., 251 Front Street, New York City, has announced the addition to its line of a new item in the form of Witco Softener No. 20, a specially prepared lubricant for rubber compounding with chemical and physical actions different from other softeners. In addition to producing a good softness, it is said by the manufacturers to lower compound cost, save from 20 to 40 per cent of milling time, and aid calendering and tubing.

The new softener does not oxidize and cures at regular curing temperatures, with no retarding effect. It gives stocks a tacky effect and does not bloom out. According to the manufacturers, it does not alter the physical properties to any extent. Witco Softener No. 20 is designed to replace mineral oil, petroleum, animal and vegetable oils.

Pigment Reinforcement

A Review of a Paper Presented by R. W. Lunn, M.Sc., F.I.R.I., at a Meeting of the Institution of the Rubber Industry, London, December 13, 1928.

By Harlan A. Depew

THERE are two general methods of studying pigment reinforcement; one is by means of abrasion resistance and the other consists in determining the work done in stretching a piece of rubber, and it is measured by the area between the stress strain curve and the elongation axis. Lunn chose the latter method and determined not only the work done in breaking the test piece but also the work done in stretching the rubber to various elongation short of break. The work done in stretching a piece of rubber was factored into two parts; one factor was the energy inherent in the base compound and the other was the increase in energy brought about by the pigment.

The pigments compared were a precipitated barytes (blanc fixe), ordinary zinc oxide, Thermatomic Black, and carbon black. The data obtained is shown graphically in Figure No. 1 and is redrawn in Figures Nos. 2-5 to bring out special points. From this data, it is concluded that all four pigments reinforce; carbon black reinforcing to the greatest extent and blanc fixe the least. Figure No. 1 shows that the work done in stretching the Thermatomic Black, the blanc fixe, and the zinc oxide stocks to the various elongations short of break, agrees closely, which was to be expected since the stress strain curves for each of these compounds is similar. Carbon black which has a stiffer stress-strain curve, required more energy in stretching to the various elongations. Between a pigment loading of 15 and 50 volumes of pigment, the work done in breaking the carbon black stock was the greatest.

Figure No. 5 shows the change in pigment energy per unit volume of pigment with increased volume of loading. Two conclusions are drawn from this curve: first that since the curves flatten out and do not cross the abscissa, pigments do not cause negative reinforcement. The least that the pigment can do is to act as a simple diluent at high volume loadings. Since the curves flatten out and approach zero reinforcement together, it follows that there is little choice in the pigment used when high volumes of pigment are incorporated.

Whenever an excellent piece of work is done it is the natural tendency to suggest that the author might have made his paper more complete if he had done a great deal more work. A smaller intensive program will, however, often be worth a great deal more than a broad program that only grazes the surface. Although the scope of the problem is intensive, as it should be, it will be interesting, nevertheless, to make some predictions on a basis of the work done as to what the results would be if it should be extended to two other carefully chosen pigments. In Figure No. 5 the dashed lines show where a fine particle size zinc oxide and a ground barytes might be expected to fit in. Table No. 1 gives the reviewer's opinion of the probable particle size and dispersion of the four pigments used together with those of the two pigments suggested for further work.

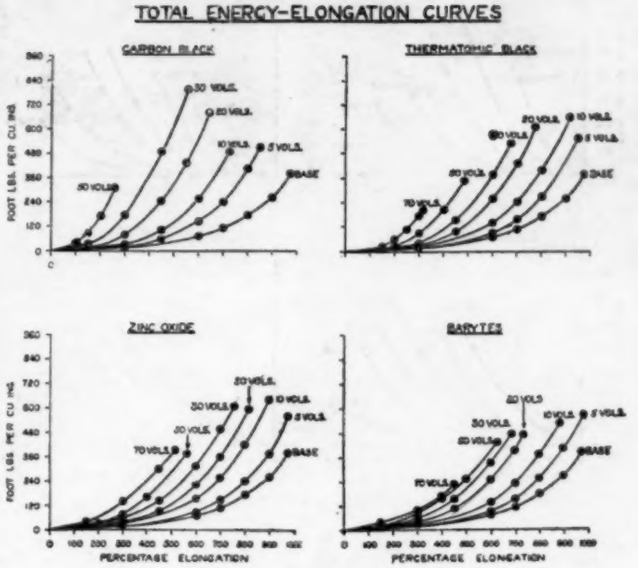


Figure I

Table No. 1

		Estimated Particle Size Microns	State of Pigment (b) in Rubber
Pigments used in tests	(Carbon Black	0.06-0.01	Flocculated
	(Thermatomic Black	0.35	Sl. Flocculated
	(Barytes (Blanc Fixe)	0.4—0.5	Dispersed
	(Zinc Oxide	0.30	Dispersed
Additional Pigments	(Fine Particle Size Zinc Oxide	0.15	Dispersed
	(Fine Ground Barytes (a)	1.0—2.0	Dispersed

(a) Intermediate in particle size between blanc fixe and common ground barytes.

(b) A pigment is said to be flocculated when a large percentage of the particles are in groups. As the pigment loading becomes

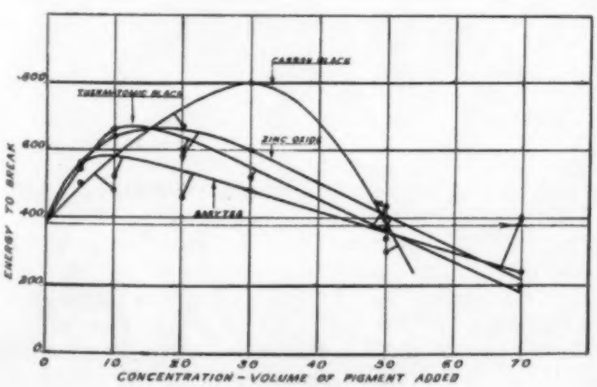


Figure II

Variation in Energy with Concentration

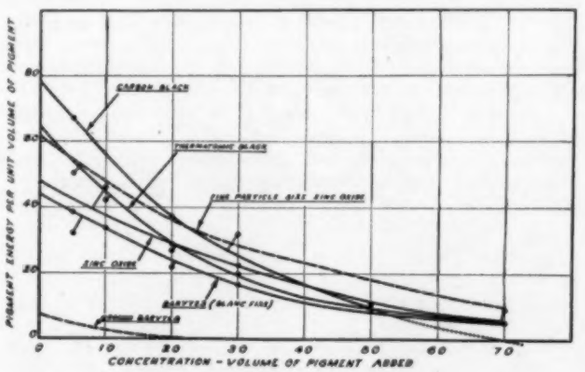


Figure V

Change in Pigment Energy per Unit Volume with Concentration

(Redrawn From Fig. I To Bring Out Special Points)

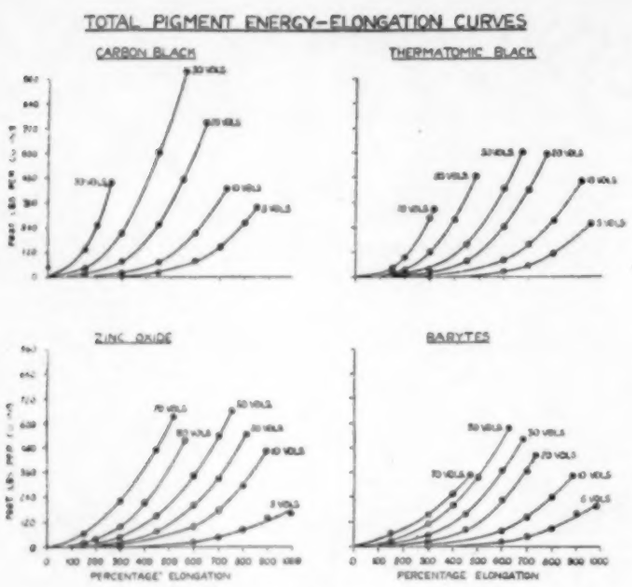


Figure III

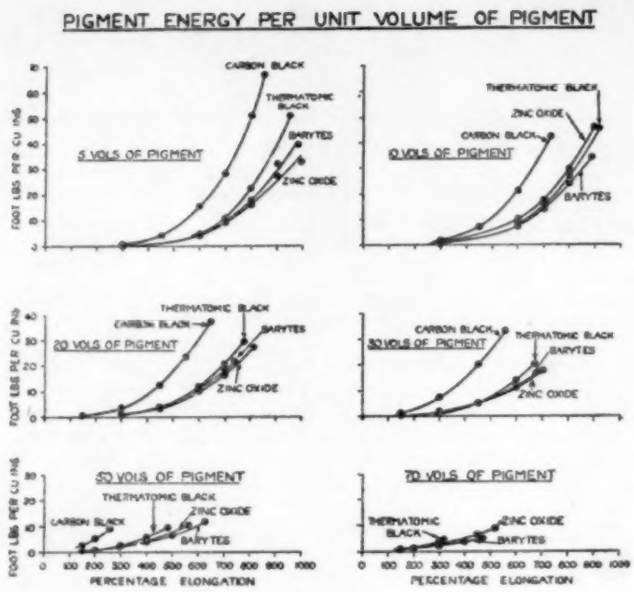


Figure IV

high a larger percentage of the dispersed pigment becomes flocculated due to the increased closeness of the particles. However, the carbon black will be largely flocculated when only a little is present and the zinc oxide will be largely dispersed even at high volume loadings.

Tests have shown that a finely divided, well dispersed pigment gives a similar shaped but longer stress strain curve than a coarser well dispersed pigment. Accordingly the curve for a fine particle size zinc oxide (Figure No. 5) will parallel that of the ordinary zinc oxide, but with higher values. Ground barytes, on the other hand, although dispersed due to its relatively large particle size will be very close to the base line at all pigment loadings.

Considering the slope of the carbon black curve, it is interesting to speculate whether it might not cross the abscissa as shown and give a negative reinforcement. If it did cross, the negative reinforcement might be due to oxidation of the rubber during the cure caused by absorbed oxygen[1] carried to it through the pigment.

Methods

A number of unusual and interesting methods were used in the course of this work. The shape of the stress strain curve was determined by means of Schopper test pieces and since these gave low values for the breaking tensile and elongation, dumb-bell test pieces were used to obtain this point, and the stress strain curve was prolonged to it. Lunn stated that the accuracy of the breaking figures was insufficient to allow too much emphasis to be put upon them. However, tests in the reviewer's laboratory lead him to believe that the accuracy was higher than was claimed.

The base compound used consisted of rubber 100 parts, Litharge 10.3 parts, and sulfur 3 parts and the compounds were cured for 45 minutes at 30 pounds steam pressure. The use of a lower Litharge content seems to be justifiable, but there is a question as to whether this formula would smooth out the difference in cure if a fine particle size zinc oxide had been used. Further, the low sulfur content would be questionable, if pigments should be tested that combine with sulfur. It is certainly difficult to choose a formula that will be entirely successful in separating the chemical activity of a reactive pigment such as zinc oxide from its mechanical reinforcing power.

A great deal more work is done in milling a large amount of pigment in the rubber than in milling only a small amount. Accordingly, the rubber used in this test was severely milled in order that this variability would not enter into the final tests. The plasticity in an ordinary factory stock is around 250, but the plasticity of the stock used in these tests was reduced to about 4. The acetone extract, 3.24, indicates that a certain amount of oxidation took place during the milling.

[1]Beaver & Keller—Journal of Industrial & Engineering Chemistry, Vol. 20, No. 8, P. 817.

Calculations

The calculation of the pigment energy per unit volume of pigment was obtained from the following equations:

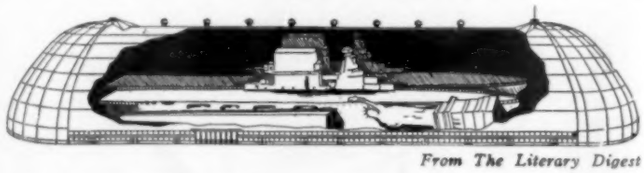
1. ^{e}A = pigment energy per unit volume of pigment.
2. $^{E}A = {}^{e}R + {}^{e}A$.

^{E}A = work done in stretching the compound containing A.
^{e}R = energy due to the rubber portion.
^{e}A = energy due to X volumes of pigment.

The value for ^{e}R is the work required to stretch the base compound to the elongation at which the compounded stock was stretched. The author showed, by cubical models, that the rubber in a compounded stock was stretched to the same extent as the rubber in an uncompounded stock stretched to the same elongation. It should be pointed out that this demonstration applies to average conditions and does not apply to localized uneven strains around the pigment particles and flocculates.

The Goodyear-Zeppelin Hangar

THE size of the airship hangar now being built in Akron to house the two Navy dirigibles which will be constructed by the Goodyear-Zeppelin Corporation almost staggers comprehension. As graphically shown in the accompanying illustration the hangar could accommodate



From The Literary Digest

the two largest warships afloat,—the air carriers *Saratoga* and *Lexington*,—without their masts, and the Statue of Liberty and Washington Monument could lie end to end beside them.

The hangar will be 1,200 feet long, 360 feet wide and 200 feet high. It will be the largest building in the world without pillars or posts to hold it up and will have what is said to be the world's largest single unobstructed floor area,—389,000 square feet.

It is expected that a minimum of 600 men will be employed in the construction of the first dirigible and it is estimated that it will take three years to construct it.

The Chemical Show

(*Continued from page* 196)

throughout and utilizing the high velocity of the vapor and entrained liquor to accomplish the separation. This machine is self-contained.

UNITED STATES RUBBER COMPANY, New York City.—Displayed rubber-lined pressure and storage tanks, rubber-lined drums for acid transportation, rubber-lined valves and pipes, hard-rubber pipes and fittings, and miscellaneous containers and equipment used by the chemical industry to resist chemical erosion. A cross-section of a pressure tank was exhibited showing how the tank may be emptied by the use of air pressure. Emptying tank cars and storage containers by air pressure is a comparatively new development.

The Rubber Manufacturers Association, Inc.

(*Continued from page* 199)

of the industry was the founding of the New England Rubber Club in Boston, Mass., in 1900; in 1909 the organization was incorporated under the laws of the state of Massachusetts as the Rubber Club of America; in 1927 it again changed its name to the Rubber Association of America. F. A. Seiberling, president of the newly constituted body, at the meeting on May 10, expressed the sentiment that under the present arrangement he looked for a greater benefit to the membership in the industry than ever before. The industry can well be proud of the record of its several trade associations and under the competent directorship of the new organization many new phases of co-operative effort within the industry can be expected.

Rubber Under Great Pressure

IN a series of experiments performed at the Jefferson Physical Laboratory of Harvard University, Professor Percy W. Bridgeman has developed some interesting results with various commodities under great pressure, particularly in the case of rubber.

While the experiments on the properties of rubber have not been elaborate the main results can be briefly described. It is a well established fact that the melting point of most all substances is raised by subjection to high pressure. Rubber is not an exception to this rule, but when exposed to sufficiently high pressure it becomes as rigid and brittle as it is under ordinary circumstances when exposed to the temperature of liquid air. Rubber in this very hard and brittle condition is harder than mild steel, so that under some conditions it is possible to make an impression in steel of cracks or other imperfections contained in a washer of soft rubber pressed into close contact with it.

Rubber Heart Is Put in Cat

A cat spent one of its fabled nine lives recently equipped with a rubber heart, according to Dr. O. S. Gibbs of Dalhousie University, as reported by the *New York Times*.

The heart, electrically operated, maintained full action over a period of hours in the feline circulatory system, from which the natural heart had been removed.

The operation on the cat took about five minutes. After the rubber heart was installed the cat lived several hours.

BOOK REVIEWS

1929 YEARBOOK. Published by the Tire and Rim Association, Inc., Cleveland, O. 93 pp.

In addition to full statistics on the number of rims of every type inspected and approved by the association from 1917 to 1928, this annual contains complete load and inflation tables, diagrams of rim contours, a summary of the rim equipment of all American cars, and valve descriptions and drawings. The roster of the association membership and the constitution and by-laws are also included. The 1929 Yearbook is printed in a larger size than in previous years, handsomely bound, and thumb-indexed.

FIFTEENTH ANNUAL REPORT. Published by the International Association for Rubber and Other Cultivations in The Netherlands, The Hague. 1929. 32 pp.

Detailed statistics on the production of plantation rubber in the Dutch East Indies are contained in this report, together with a summary of local labor problems, taxation, rubber thefts, and association activities. At the end of 1928 this association had 200 company members and 65 individual members. Appended to its own report, which is printed in both Dutch and English, is a separate 16-page report of its propaganda department, describing the work of that group in developing the applications of latex and the use of rubber flooring and rubber roadways.

A REVIEW OF WITCO ADVERTISING FOR 1928. Published by Wishnick-Tumpeer, Inc., New York City. 1929. 24 pp.

To show the extent of the service provided by Wishnick-Tumpeer, Inc., and its subsidiaries, this reprint of 20 business paper advertisements during the past year has been issued.

EVALUATION OF VARIABLE-TEMPERATURE CURES. By J. R. Sheppard and W. B. Wiegand. Reprinted from Industrial and Engineering Chemistry. 1929. 12 pp.

When two vulcanizing schedules have involved a variation of temperature, *i. e.*, a temperature gradient, comparison of the two, or the evaluation of either, has usually been neglected, because of the mathematical difficulties. This paper shows how evaluation in terms of a standard unit may be extended to any schedule, whether it consist of a single, constant temperature, of several temperatures used successively ("stepped cures"), or of a continuous temperature variation.

A PICTURE OF WORLD ECONOMIC CONDITIONS. Published by the National Industrial Conference Board, Inc., New York City. 1928. 130 pp.

This is a resumé of industrial and trade conditions during the past year in 17 foreign countries. Dr. Alberto Pirelli, head of the rubber manufacturing company which bears his name, is among the outstanding authorities who are contributors.

SOVIET-AMERICAN TRADE OUTLOOK. Published by the Amtorg Trading Corporation, New York City. 1928. 30 pp.

The use of automobiles in the U. S. S. R. has as yet hardly begun, but with the rising per capita income in that country the demand for motor cars is expected to become increasingly important. Rubber goods other than automotive products are also required in Russia, and this concise analysis of the aspects of trade between the United States and that country, including statistics and maps, fills a current need.

MERGERS AND THE LAW. Published by the National Industrial Conference Board, Inc., New York City. 1929. 164 pp.

The course of the so-called "trust problem" from its origin in the 1880s to the present time and the development of public policy in this regard are the subjects of this volume. The du Pont case, the United Shoe Machinery Company case, and other concrete applications are discussed in detail, and the various laws and regulations covering the subject are analyzed.

APPLIED CHEMISTRY REPORTS, VOL. XIII. Published by the Society of Chemical Industry, London, England. 1928.

These reports on the progress made in the various departments of applied chemistry are published annually, and each section is contributed by an acknowledged expert in the subject on which he writes. An article on India rubber is contributed by D. F. Twiss.

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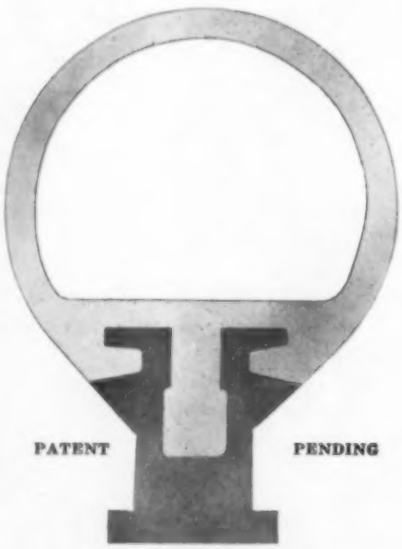

The heavy shaded portion in the above illustration shows the base of steel.

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EDITORIAL COMMENT

A Monograph on Rubber

AT the recent meeting of the American Chemical Society at Columbus, Dr. H. E. Howe, editor of *Industrial and Engineering Chemistry*, speaking before the Rubber Division, suggested that the time was opportune for the members of the Division to prepare a comprehensive monograph on rubber covering all chemical phases of the subject and including chapters on manufacturing processes, etc. THE RUBBER AGE stands firmly back of this suggestion and seconds a quick response from the industry on Dr. Howe's suggestion. Great progress has been made since the formation within the American Chemical Society of the Rubber Division. There was a time when rubber chemists and technologists declined to exchange views, thinking that any frank discussion would entail the divulging of business secrets. Today the meetings of the Rubber Division are always animated and full of interest, the members having learned that by a free exchange of knowledge they more often gain than lose. The willingness to share their knowledge makes the members of the Rubber Division the one group capable of compiling the work advocated by Dr. Howe. The paucity of the technical literature on modern conceptions of rubber, its various properties and uses would seem to offer an unusual opportunity for real service to the industry, if the technical experts of the industry will but divide up the subject into its logical chapters and proceed. Such chapters could be assigned to subdivisions composed of experts well known for their interest and regarded as authorities.

The chapters could be edited by a central committee with such help as the American Chemical Society could give them and the result would be a forward looking book with a critical evaluation of the present knowledge and theories together with such tables of data as might be useful and acceptable as reliable and authoritative.

The Paint and Varnish Division of the American Chemical Society has undertaken a similar monograph as relating to its own phases of chemical research in connection with raw materials of lacquer manufacture. If the paint and varnish chemists can do this,—and they are succeeding,—surely the rubber chemists can do as much. THE RUBBER AGE hopes that the Rubber Division of the A. C. S. will adopt Dr. Howe's suggestion and proceed with the work without delay.

A Year of Records

FROM a reading of the statistics of the rubber industry during the few months of the present year it is quite evident that we are in for a twelvemonth of exceptional activities which will establish many high records in the history of crude rubber and the manufacturing industry. The year began with a period of uncertainty because of the sudden swing from restricted to unrestricted production. But already consumption by the manufacturing industry has exceeded all expectations and has satisfactorily taken care of any excessive accumulations on the plantations. The consumption figure for the United States alone for the first four months of the year, totaling 176,847 tons, is a record for all times and should be a source of considerable solace to Mincing Lane. The largest production of automobile casings in history is a reflection of this consumption figure. A total of 21,084,000 casings and 20,752,000 inner tubes were produced in the first three months of the year. Imports of crude rubber have been the highest on record but have not represented a volume out of line with the stupendous consumption figures.

Correlating these records we also find automobile production and automobile rim outputs exceeding any previous record. Surprising as it may seem, especially in view of the present relative low price for crude rubber, reclaimed rubber production is also exceeding any previous record.

This all speaks exceedingly well for the present health of the industry and there is already evidence that this virile condition will be agreeably reflected on the balance sheets of the individual companies at the close of the year and will be a great recuperative tonic in rehabilitating the conditions in which the individual companies found themselves at the end of last year.

The RUBBER AGE

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NEWS of the INDUSTRY

Financial—Business
Building Operations
Personals
New Products

GOODYEAR PURCHASES GEORGIA TEXTILE MILL

Purchase of the Atco, Ga., plant of the American Textile Company to be used for making tire fabric, has been announced by Paul W. Litchfield, president of the Goodyear Tire & Rubber Company, Inc. This is the latest development in the south of the rubber company's expansion program.

Capacity of the Atco plant will be increased to 50,000 spindles, it is said. Housing conditions will be improved immediately. There are to be approximately 1,000 people employed at the plant. Atco is located near Cartersville.

Acquisition of the new textile mill gives the Goodyear Tire & Rubber Company, Inc., three fabric mills in the south. The three plants will have a capacity of 150,000 spindles. The first plant to have been bought in Georgia by Goodyear was Cedartown. It recently was improved and increased to 50,000 spindles. At Rockmart, Ga., a textile mill is being erected by the rubber company.

Construction has just been started on the plant at Rockmart. The A. K. Adams Company of Atlanta has received the general contract. The contract for the erection of 350 houses at Rockmart has been awarded Batson & Cook of Atlanta. Steel work for the mill has been let to the Virginia Bridge Company of Roanoke, Va.

MURRAY RUBBER COMPANY TO OPEN NEW WAREHOUSES

C. Edward Murray, Jr., president of the Murray Rubber Company, Trenton, N. J., announced on May 14 that more than 100 contracts have already been signed in large southern cities and applications have been received from several big companies operating hundreds of service stations to enter into contracts by which their gas stations can sell Murray tires at mail order prices in connection with their sales of gasoline and oil. Warehouses from which prompt shipments can be made to Murray chain stores will be opened in Atlanta, Ga.; Nashville, Tenn.; Memphis, Tenn.; Jacksonville, Fla.; and Charlotte, N. C.

As one of the units in the chain of 1,000 retail tire stores being organized by the Murray company, a new establishment has been opened in Richmond, Va., under the name of the Southern Auto Supply Company. John Roach is manager of the branch.

"Sales are steadily increasing and production is being further increased to take care of the constantly increasing demand," Mr. Murray stated. "Departments manufacturing mechanical goods are also busy and several large contracts have recently been received from the United States Steel Corporation and other large manufacturers."

Form Tire Dealers' League

The Automobile Tire Dealers League of America, Inc., has been formed by a group of prominent tire retailers from leading cities throughout the United States, meeting at Chicago, Ill. George J. Burger of New York City, for several years president of the National Tire Dealers Association, was elected president of the new organization. It is reported that one of the important plans of the new body is to work out an arrangement whereby their members may buy special brand or "League" tires and tubes to sell under conditions that will result in a satisfactory profit.

New Jersey Rubber at Capacity

The New Jersey Rubber Company, Lambertville, N. J., is operating to the full capacity of its plants in manufacturing reclaimed rubber. The demand for the company's product is said to be at a level far higher than at the corresponding period last year.

Capital Resumes After Strike

A number of the employes of the Capital Rubber Company, Trenton, N. J., went on strike recently rather than accept a cut in wages. The places of the strikers were soon filled and the plant placed in operation again after being idle for several days.

New Rubber Company Formed

The Tri-State Rubber Company, 4 Sheridan Avenue, Orange, N. J., has been incorporated with $125,000 capital to manufacture rubber goods. Albert M. Shutt, Eula Shutt and Elinore Savage, all of Orange, are the incorporators.

Goodyear Rubber Company Meets

Final stockholders' meetings of the Goodyear Rubber Co. are to be held in the near future to consider and confirm the vote and action of the board of directors voluntarily dissolving and terminating its corporate existence in accordance with law and also to take further action as to the liquidation of its assets, the payment of its indebtedness and the winding up of its affairs as the stockholders may deem advisable. A new company with the same name, organized under the laws of the State of Connecticut on January 30, 1929, is now operating the factory at Middletown, Conn., and producing Gold Seal rubber footwear.

$10,000,000 EXPANSION AIDS GOODRICH PROGRESS

With the completion of the new Goodrich tire plant at Atlanta, Ga., building operations to begin early this summer to be completed in time for tire manufacturing the first of next year, the B. F. Goodrich Company will have eight manufacturing units in its world-wide organization. The parent plant, of 120 acres of floor space, is at Akron. A new tire warehouse, just completed, added 316,000 feet of floor space to the parent plant. Other plants are located at Colombes, France; Leyland, England; Yokohama, Japan; Kitchener, Ontario, Canada, and Los Angeles, California. The first of this year a tire cord mill at Thomaston, Georgia, was acquired, its capacity to be more than doubled.

Goodrich expansion operations, planned and under construction, aggregate a total of more than $10,000,000, of which about $7,500,000 is being expended in building the Atlanta plant and increasing tire cord facilities at the Martha Mills at Thomaston. However, the Thomaston cotton mills will not supply all the cotton products required in manufacturing many of the 32,000 products manufactured by this huge industry. Other mills in various parts of this country produce millions of yards of fabric and cord for thousands of products of combined rubber and cotton.

MASON TIRE & RUBBER SELLS FABRIC PLANT

The Mason Tire & Rubber Corporation has sold its textile plant at Kent, O., to a prominent Akron rubber company, according to an announcement made public last month by Henry Garrison Keller, president of the firm. Mr. Keller in his statement declared that the sale of the fabric plant would help to stabilize the company, as it would be possible to purchase textiles cheaper than they could be manufactured on a part-time basis.

Although Mr. Keller did not say which Akron rubber concern purchased the plant, it is generally believed, according to local newspapers, that the B. F. Goodrich Company was the one which acquired the mill and machinery.

Firestone Addresses Lawmakers

Harvey S. Firestone, president of the Firestone Tire & Rubber Company, had the honor of being the second man without an official connection to address the California legislature on April 5. In his speech, delivered after he had come to Sacramento at the special invitation of Governor Young, Mr. Firestone talked about the nation's prosperity and the need for co-operating with President Hoover. The only other visitor to talk to the California legislators was William Jennings Bryan.

RUBBER MEN ESCAPE IN CLEVELAND CLINIC FIRE

Joseph Swain, vice-president of the Firestone Steel Products Company, was among those patients removed from the Crile Hospital Clinic at Cleveland just before the explosion and fire that caused the death of 124 persons. Dr. Wilson Jere Pearts, head of the dental division of the clinic and formerly in charge of the dental division at the B. F. Goodrich Company hospital in Akron, was uninjured although in the building at the time of the explosion.

The lives of 20 patients and nurses were saved by Howard P. Protheroe, chemist of the Goodyear Tire & Rubber Company, who recognized the bromine gas when the first odor of it came from a ventilator shaft into a reception room where he was waiting with other patients. He realized the deadly character of the fumes and warned those near him to seek the fresh air. The explosion occurred a moment later.

A committee of 36 of the wealthiest and most prominent citizens of Cleveland has been formed for the purpose of re-building the clinic. T. S. Grasselli, president of the Grasselli Chemical Company, is one of the members of the group.

NEW RUBBER COMPANY IS ORGANIZED AT TOLEDO

The Howard Manufacturing Company has been organized at Toledo, O., for the purpost of manufacturing rubber bulbs, sundries, tubing and specialized hose for air and liquid. Its factory, recently completed on a site on Concord street between Sylvania and Gradolph avenues, represents an investment of approximately $200,000, and is the largest single factory for the making of rubber products in Toledo.

The executive personnel of the new company includes Allen Gutchess, president; Frank Bailey, vice-president; F. C. Penoyar, secretary; Walter Conklin, treasurer; and Charles Green, general manager.

Thropp Awards Prizes

Cash prizes will be awarded by the William R. Thropp Sons' Company, Trenton, N. J., to students who complete the best pieces of work in machine shop practice at the Trenton School of Industrial Art. The Thropp company manufactures rubber machinery.

Boston Woven Hose to Build

The Boston Woven Hose & Rubber Company, Cambridge, Mass., has awarded the contract for the construction of its proposed three-story addition and for the scheduled alterations to its present plant to the W. Fillmore Company of the same city.

"U. S." Features Air Products

The United States Rubber Company last month inaugurated an advertising campaign in the leading aeronautical magazines which will be continued throughout the year. The company has also issued a new illustrated booklet under the title "'U. S.' Aeronautical Products," describing its line of tires, tubes, hose and accessories for aviation.

Heel and Sole Men Meet

At a meeting of the Heel and Sole Division of the Rubber Manufacturers Association, held at the Copley Plaza Hotel in Boston, Mass., on May 14, K. W. Wolcott of the B. F. Goodrich Company, Akron, O., was elected chairman of the division for the ensuing year. D. A. Cutler of the Alfred Hale Rubber Company, Atlantic, Mass., was elected vice-chairman.

Firestone Buys Buffalo Site

A corner business site in Buffalo, N. Y., has been purchased by the Firestone Tire & Rubber Company and will be used for a new building to house the Buffalo branch of the company. Work will be started in the early summer. The new site is at the junction of Main Street and Woodlawn Avenue, while the present location of the Firestone branch is 1335 Main Street.

U. S. RUBBER OPENS NEW BRANCH AT DULUTH, MINN.

Leasing of a large corner building in the heart of the automobile row of Duluth, Minn., by the United States Rubber Company and the J. F. Dennis Company for a general wholesale and retail branch for all United States Rubber products was announced early this month by the John A. Stephenson Company, local realtors.

Extensive alterations and repairs have already been started to put the building into shape for occupancy by the rubber company. The location of the building is 302 East Superior Street.

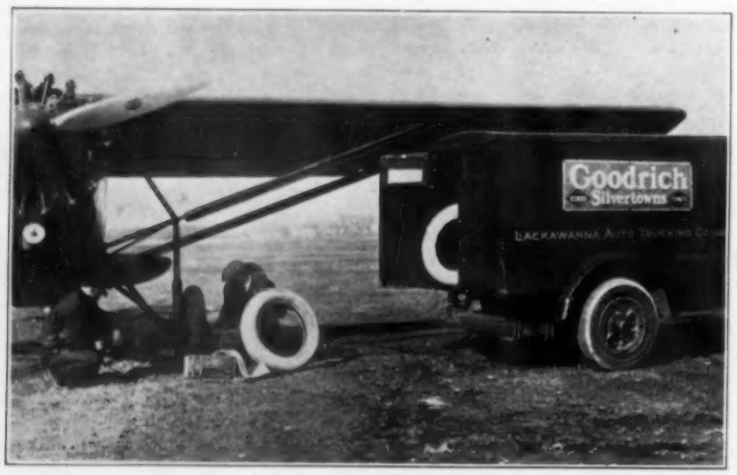
TEN RUBBER SECURITIES DECLINE TO NEW LOWS

Despite the present strong position of the automobile tire manufacturing industry and other rubber businesses, the stock issues of the leading companies continued to decline during the past fortnight, ten rubber company stocks dropping to new low levels for the current year. These were Ajax, Firestone preferred, Fisk common and preferred, Goodrich, Lee, Miller common and preferred, Norwalk and Seiberling.

Practically all the leading rubber issues are now selling below their high levels, and in view of the fact that good earnings are expected for the first six months of this year some interests regard these stocks as good purchases during reactionary movements. The Standard Statistics Company, after an investigation, finds that "new annual sales and earnings records are looked for in the full year, 1929," and various authorities have already estimated Goodyear's earnings for this year at $14 a share, Firestone's at $38 a share, Goodrich's at from $13 to $15, Seiberling's at $5 a share, General's at $34 a share, and that of United States Rubber at about $5.50 a share.

Among the stocks of companies not listed below, National Rubber Machinery was most active, rising 8½ points to 38 in the second week of the fortnight. Hood Rubber bonds touched new lows of 68 for the 5½ per cent. issue and 85 for the 7 per cent. issue.

Changing Tires on a Plane



AIRPLANE tires, as well as automobile tires, need to be changed and repaired occasionally. The photograph shows a monoplane at Holmes Airport, New York City, being jacked up so that a "shoe" in need of repairs can be replaced.

Late Stock Prices

	Last Price May 18	Last Price May 3	High —1929—	Low —1929—
Ajax	6¾	7½	11¼	6⅝
Falls	6	5	11⅝	5
Faultless	35	32½	39⅞	32½
Firestone	295	289	309	220⅛
do. 6% pfd.	108	109½	111	108
Fisk	10⅞	11½	20⅛	10¾
do. 1st pfd.	54⅝	58	72½	54⅝
General	290	285	298	236
do. pfd.	99½	99½	102	99½
Goodrich	83¼	84½	105¾	81
do. pfd.	113	113	115⅛	113
Goodyear Com.	133	134	154½	112
do. pr. pfd.	103	103⅝	104⅞	101¾
Hood	20	20	27¼	20
India	59½	60	75	39
Intercontinental	9½	9⅜	14¼	8¾
Kelly Springfield	17⅛	17⅝	24	11
do. 1st pfd.	—	—	100	88
Lee	18½	18½	25	17½
Miller	22¼	23⅛	28¾	22
do. pfd.	70	72½	83	70
Mohawk	53	58	66	53
do. pfd.	81	85	90½	81
Norwalk	3½	4⅛	6⅞	3½
Seiberling	44⅛	47¾	65	44⅛
do. pfd.	106	106½	107⅞	105
U. S. Rubber	56	57¼	65	42
do. pfd.	81¼	83	92½	77

James Mead

James Mead, president of the Mead Rubber Company, Stoughton, Mass., died of a heart attack on May 19 at the age of 60. He was in Maine when stricken.

Percy W. Leavitt

Percy W. Leavitt, historian of the B. F. Goodrich Company and its oldest employe in point of service, died on the morning of May 13 in City Hospital, Akron, O., in his seventy-fourth year as the result of a stroke suffered three days previously. During recent years he had held the honorary position of librarian, steadfastly declining to retire from active service.

Mr. Leavitt was born in Boston, Mass., August 21, 1855, and lived there until he came to Akron on December 29, 1880. After the Boston business district fire of 1872, which swept away the company with which he started his career, he answered an advertisement for a bookkeeper and the late Dr. B. F. Goodrich went to Boston to interview him. He was offered the position of accountant with the rubber company, which at the time was struggling for recognition and had a payroll of 55 persons.

He shared desk space with Dr. Goodrich and together they solved many of the problems that faced the young company, becoming fast friends. In 1910 he completed the compilation of a history of the company, covering the 40 years of its existence.

Funeral services were held May 15 with burial at Glendale cemetery. He leaves his widow, two sons, a sister, and four grandchildren.

Calvin W. Vaughn

Calvin W. Vaughn, president of the Vaughn Machinery Company, Cuyahoga Falls, O., died suddenly of a heart attack while attending a party in honor of Mrs. Vaughn's birthday on the evening of May 11. He was 70 years of age at the time of his death.

Mr. Vaughn was born in Cuyahoga Falls on July 11, 1858, the son of James A. Vaughn, who a year previous had become a member of the firm of Turner, Parks & Co., as manager of the plant and chief designer of equipment. On January 1, 1889, the partnership was dissolved and the business incorporated as the Turner, Vaughn & Taylor Co. Among the incorporators were Mr. Vaughn and his son, Calvin W. Vaughn, the latter having begun work as an apprentice in 1875. When the elder Mr. Vaughn died later in the same year, his son inherited his interests in the business and in 1895 bought out the interests of the others and became president, treasurer and general manager of the company.

The Vaughn Machinery Company, as the firm was re-named, became one of the leaders in the manufacture of rubber working machinery for the growing industry of the Akron district. At the present time it caters to the steel, copper and rubber industries and numbers among its customers some of the most prominent concerns in the country.

Mr. Vaughn is survived by his widow, one son and one sister. Funeral services were held May 14 with burial at Oakwood Cemetery.

Tires Auctioned Off By Post Office

HERE is one pile of a group of hundreds of automobile, motorcycle and bicycle tires recently sold at auction by the Post Office at Washington, D. C. They were auctioned off by the government together with thousands of other miscellaneous unclaimed articles that had accumulated in the mails.

FOOTE BROTHERS MOVE GENERAL HEADQUARTERS

On June 1, the general offices of the Foote Brothers Gear & Machine Company at Chicago, Ill., will be moved to more modern and commodious quarters at 111 North Canal Streeet. The company headquarters were previously located at 215 North Curtis Street, but the officers and directors of the company decided that additional space was needed for expansion. The new general offices will occupy one entire floor of 27,000 square feet in an up-to-date 15-story office building.

The gear and reducer business of the company has increased over 300 per cent in the last five years, and early in 1929 the company acquired three large concerns engaged in the manufacture of tractors and graders and merged them into a new road machinery division.

Included among recent additions to the activities of Foote Brothers Gear & Machine Company is the purchase of a new factory located in Chicago for the manufacture of quality fly-wheel starter gears for all makes and models of American motor cars. The new factory provides modern facilities for producing such equipment on a quantity production basis. Sales will be made direct to manufacturers and to jobbers. This division is to be in charge of John C. Phelps and also includes the production and sales of IXL silent timing gears, which have long been a standard product of the firm.

Firestone Home Afire

A fire which broke out early in the morning of May 3 at the Akron residence of Harvey S. Firestone, Jr., vice-president of the Firestone Plantations Company, caused members of the family to leave the house for a brief period. The house, located at 50 Twin Oaks Road, was only slightly damaged. Three fire companies were called.

RUBBER ASSOCIATION IS LISTING MANUFACTURERS

The Rubber Manufacturers Association is revising and bringing up-to-date its list of American rubber manufacturers and manufactured rubber products in the United States.

The Association is constantly in receipt of inquiries from individuals and firms both in and outside the industry, asking for information concerning various rubber products and the names of manufacturers producing specified rubber products. Very often these inquiries refer to odd or uncommon products about which there is little information easily available.

In order to answer such inquiries adequately and fully the association maintains a file of names of rubber manufacturers, together with as complete a list as it is possible to collect and maintain of their principal products. In this way it is possible to answer nearly every question of the kind indicated and to refer prospective new customers for rubber products to those manufacturers who might be interested.

The Rubber Manufacturers Association has circulated to all manufacturers of whom it has a record, forms listing the principal rubber products and has asked manufacturers to check and return these forms to the association office. The association will be pleased to send copies of this to any manufacturers who may not have received them if they will request copies from the association office at 250 West 57th Street, New York City.

Footwear Firm Incorporated

Horton & Field, 109 Broad Street, Elizabeth, N. J., have been incorporated with $125,000 capital to manufacture rubber boots and shoes. The incorporators are Alfred E. Horton and M. L. Horton of Elizabeth and Clayton H. Field of Brooklyn, N. Y.

Rubber News Around the World

VOTE IN RUBBER TRUST IS DENIED FOREIGNERS

The stock of the Rubber Plantations Investment Trust has been the subject of fairly active trading on the New York Curb Exchange since its recent listing. Evidently the directors of the Trust find that there has been a demand for the stock in America, and they are, therefore, taking steps to restrict control to British hands. Meetings for the purpose of making such provision have been held and a resolution was passed depriving foreign shareholders of voting rights.

The trust, which has an issued capital of £2,250,000 ($11,250,000), holds shares and debentures in the East. Since the British General Electric took steps to restrict control of the company, several other undertakings have followed suit—namely, the Burma Corporation, Fairey Aviation Company, the newly-formed Cable-Radio merger company, and now the Rubber Trust.

That the storm aroused by the action of the General Electric has not been repeated in the case of its imitators is due to the fact that the General Electric had originally intended to issue new shares on bonus terms, depriving American shareholders of participation in the bonus issue. No such issues have been announced by the other concerns which have since restricted control. It is reasonable to assume that the proportion of the Rubber Trust's shares held by foreign investors is still reasonably small, and that the action now contemplated is more in the nature of a preventive than a correction.

Since the restrictive resolutions regarding voting power, however, the stock has not declined on the New York Curb as was the case with the shares of the General Electric Company, Ltd. The annual report of the trust, while showing a decline in 1928 earnings to £182,897 from £326,754 in the previous year, the dividend rate has been maintained at 15 per cent and the investments in rubber company shares have appreciated during the present year.

BELGIUM MAKES PROGRESS IN ITS RUBBER INDUSTRY

Belgium's rubber industry and trade, almost wholly through the efforts of one company by its recent aggressive policy in the extension of its tire exports, shows remarkable progress over the past two years. Until a few years ago, Belgium was not regarded as a supplier of rubber goods, but in 1928 it supplanted Austria as the seventh largest rubber exporting country in the world.

In 1925 imports of rubber products into Belgium exceeded exports by as much as $3,132,000, which was reduced about one-third during the next year. By 1928, in less than five years, the country increased its exports until in that year Belgium declared a favorable balance of $3,131,400.

British Tire Prices Cut

The majority of British tire manufacturers announced reductions last month varying from 5 to 20 per cent, according to the size of the tires. The price cut was inaugurated by Michelin, which has always been the first company to introduce price reductions on the British tire market. American manufacturers with British branch plants and sales offices have followed the others in lowering their price schedules.

Seeks American Agent

The German manufacturer of a rubber article for women's use, mentioned on page 150 of our last issue, informs us that he will either sell patent rights to manufacture the article in the United States on a royalty basis or will consider appointing a sales agent in this country. The article costs 35 cents f. o. b. Hamburg. Manufacturers or sales agents desiring further particulars should write direct to F. W. Emil Spardel, 122 Hasselbrookstr., Hamburg 23, Germany.

PREDICTS GREAT CHANGE IN RUBBER SHOE TRADE

That the rubber footwear industry will be revolutionized in the course of the next two years is the opinion of A. R. Knight of the Dela Rubber Company, Ltd. He believes that the possibilities of rubber, as applied to the footwear trade, are so immense that at the moment it is to be considered in its infancy.

"We shall be able, I believe, in the very near future," Mr. Knight says, "to offer to the trade a range of designs and types which will ultimately prove to be more attractive than some of the leather footwear now on the market. I would go so far as to say that in time the appearance of rubber promenade shoes will be, to all intents and purposes, exactly the same as good quality patent leather and willow calf shoes.

"During the past three years, manufacture of rubber footwear generally has been completely overhauled and reorganized, and without doubt rubber footwear manufacturers are now realizing the importance of smart and fashionable designs. The lasts used in rubber footwear are invariably of aluminum, and I am sure that the trade will appreciate the cost incurred, due to the fact that an aluminum last can not be cut down or trimmed into a new shape to meet the requirements of the latest fashion.

"I would suggest that we are rapidly approaching an age of electricity, when the absence of rubber footwear may lead to harm, due to the fusing of wires, quite an everyday occurrence with the many electrical contrivances in the home and factory. Once it is known by the general public that by wearing rubber-soled footwear they are immune from electric shocks, many will insist upon this type."

RUBBER ROADWAYS URGED AT CEYLON ASSOCIATION

Walter Shakspeare presided for the first time this year at the annual meeting of the Ceylon Association in London recently. Before proceeding with the review of the year, he made suitable reference to the great loss the association had sustained in the death of the late president, W. D. Campbell.

Mr. Shakspeare said that a comforting feature of the rubber situation was the large increase in the absorption of rubber in America in 1928, estimated at 70,000 tons over the previous year, and the encouraging expansion in the absorption by the rest of the world. World stocks showed a falling off in the year 1928, and if consumption continues to increase on a moderate scale during 1929, there should be a further contraction in available stocks in spite of increased production, he stated.

The suggestion has been made in Ceylon, according to Mr. Shakspeare, that crude rubber should be provided free of charge or at a specially low cost for rubber paving purposes, but the costs of manufacture on the present basis are so high that a scheme on these lines would not result in the progress anticipated. Mr. Shakspeare, however, is convinced that rubber roadways on a large scale will come, and thinks it is up to manufacturers to cooperate and borough authorities to interest themselves seriously—even property owners, who have much to gain in the preservation of their buildings—and then producers will feel justified in assisting to complete the spadework initiated and carried out by Rubber Roadways, Ltd.

Continental Profits Higher

The competition of foreign tire manufacturers on the German market did not increase in strength during the past year, according to the Continental Cauotchouc & Gutta Percha Company in its annual report. Whereas it was possible to develop further the company's own sales abroad, the competition among German firms on the home market is described as extraordinarily keen. The company's net profit increased to £134,000 and the dividend rate was raised by 1 per cent to 7 per cent.

CATALPO
for
Inner Tubes

Names in the News

JOHN WESTREN, vice-president and managing director of the Dunlop Tire & Rubber Goods Company, Ltd., Toronto, Can., and former president of the Rubber Association of Canada, was recently elected president of the National Club at Toronto. He is also a member of the Granite Club, a director of the Lambton Golf Club, a director of the Canadian National Exhibition, and has been on the board of directors of the Young Men's Christian Association in Toronto for several years. In years of service, Mr. Westren is the senior member of the Dunlop staff.

DR. ELLWOOD B. SPEAR, for over six years chief chemist of the Thermatomic Carbon Company, has resigned. He is at present enjoying a vacation at his summer home in Wilton, N. H.

HARVEY S. FIRESTONE, SR., president of the Firestone Tire & Rubber Company, has been named a member of the commmittee preparing plans for the international celebration of the golden anniversary of the invention of the incandescent lamp by THOMAS A. EDISON. PRESIDENT HOOVER is honorary chairman of the committee. Mr. Firestone returned to Akron last month after a business tour to 24 major cities of the south and southwest.

G. M. TISDALE has been appointed director of purchases of the United States Rubber Company. Mr. Tisdale, an Annapolis man, left the United States Navy in 1920 when he had reached the rank of lieutenant commander and entered the purchasing department of the company at that time. He has been assistant general purchasing agent since 1921.

ALBERTO PIRELLI, head of the Pirelli Rubber Company, has been acting as chief Italian expert at the Reparations Conference in Paris. As chairman of the International Chamber of Commerce, he addressed the League of Nations economic consultative committee on May 6, speaking appreciatively on American industrial progress.

WALTER WHITE, president of the White Motor Company, ALLARD SMITH, president of the Cleveland Chamber of Commerce, and A. ALEXANDER, president of the Cleveland Street Railway Company, were luncheon guests of P. W. LITCHFIELD, president of the Goodyear Tire & Rubber Company, recently. They made the trip from Cleveland to Akron in the Goodyear dirigible *Puritan*.

WILLIAM A. WATTS has been appointed director of sales of the St. Clair Rubber Company, operating directly from the factory at Marysville, Mich. He has had previous experience in the automobile top material field, having represented Pantasote and the Standard Textile Products Company. According to C. A. PFEFFER, general manager of the St. Clair company, an extensive new program to broaden its merchandising activities has been inaugurated.

H. S. QUACKENBUSH, Portland branch manager of the Goodyear Tire & Rubber Company, was the principal speaker at a recent sales conference of 35 Goodyear tire dealers of Jackson and Josephine Counties at the Hotel Medford, Medford, Ore.

ROLAND D. DOANE, for some years with the sales department of the United States Rubber Company, is now advertising manager of the Lehigh Portland Cement Company, Allentown, Pa.

N. B. BRODHEAD has been appointed as manager of the truck and bus tire department of the Fisk Tire Company, Inc., and has already assumed his duties in that capacity at Chicopee Falls, Mass. Mr. Brodhead comes to Fisk with 10 years of experience in the tire business and a wide acquaintance in the rubber industry. Previous to joining Fisk, he was connected with the Kenyon Tire Company as assistant to the president. His home is in Bryn Mawr, Pa.

N. B. BRODHEAD

J. D. KERR is now domestic sales manager of the National Aniline & Chemical Company, New York City, in charge of all color, intermediate, pharmaceutical and food color sales. He is succeeded as manager of the intermediate division by E. M. MAXWELL, formerly purchasing agent of the company.

WILLIAM E. DUCK, managing director of the London factory of the Firestone Tire & Rubber Company, has returned to England after a flying trip to visit company officials at Akron. He reported that the British plant is making rapid strides and that production will be increased from 1,500 tires to 2,500 tires daily.

J. H. WERNER, district sales manager of the Goodyear Tire & Rubber Company, presided at a banquet to 100 Pierce County Goodyear dealers at the Tacoma Hotel, Tacoma, Wash., on May 3. He said that, judging from reports for the first three months of 1929, Goodyear sales promise to exceed any other year in the company's history.

JOHN W. WHITEHEAD has been elected president of the Norwalk Tire & Rubber Company to succeed WILLIAM B. MILLER. LOUIS P. ARNOLD was advanced to vice-president and W. F. RUSSELL was elected secretary.

F. J. GLEASON, who has had many years' experience in the rubber business, has been appointed vice-president and manager of the Balloon Rubber & Heel Corporation, Beverly, Mass. B. G. GRAY, who is also vice-president of the Western Maryland Railroad, is president.

E. C. TIBBETTS, formerly advertising director of the B. F. Goodrich Company, played an important part by his testimony in helping the William H. Rankin Company, Inc., and the Charles A. Ramsey Company, advertising agencies, win a ten-year court action in federal court in New York against the Associated Bill Posters of the United States and Canada. The two companies sued for $234,000 damages because of the refusal of the defendant organization to recognize them as agents.

RHYS D. EVANS, research physicist at the Goodyear Tire & Rubber Company, is among the alumni of Ohio University, Athens, O., who have been invited to become members of a chapter of Phi Beta Kappa, national honorary scholastic fraternity.

W. H. PERKINS, head of the Columbus, O., branch of the Goodyear Tire & Rubber Company, was in charge of a meeting of 40 Goodyear dealers of the Marion, O., district, held April 15, at the Hotel Harding in that City. New methods of tire servicing and the proper equipment for dealers were tht main topics of the session.

E. G. SHICK, manager of the Philadelphia branch of the Goodyear Tire & Rubber Company, was the principal speaker at a meeting of the Goodyear dealers of Trenton, N. J., and vicinity, held last month at that city.

WILLIAM THOMSON, head of the firm of Wm. Thomson & Company, has been appointed a director of the North British Rubber Company, Ltd., to succeed his brother, the late SIR JAMES WISHART THOMSON, K. B. E.

H. W. REIGHARD has received an award of $400 from the Goodyear Tire & Rubber Company for a suggestion for greater factory efficiency. He now leads the 1929 race among the company's employees for the Litchfield medal awarded annually for the year's best suggestion.

Current Crude Rubber Items

PRICES RISE SHARPLY ON RUBBER EXCHANGE

Advance of More Than Three Cents a Pound During Fortnight is Featured By Heavy Buying in the Rallies on the Exchange.

BULLISH activity, spurred on by the reports of heavy American consumption of crude rubber during April and May, brought a sharp advance of price quotations for futures on the Rubber Exchange of New York, Inc. The rise in prices was practically steady during the fortnight with the result that prices on May 18 were from 320 to 340 points higher than at the close on May 4.

Trading was considerably more active than during the previous two weeks. Whereas the highest day's sales during the preceding fortnight was only 946 contracts, the thousand-mark was passed on seven of the twelve trading days in the two weeks under consideration. A wide participation in the buying movement on part of both the trade and the commission house clientele made for the large turnover.

Support was also had from the foreign markets, which moved substantially forward as the cables reported a considerable improvement in sentiment on the American statistical report for last month. Both the London and Singapore markets closed with gains proportionate to the advances made on the Rubber Exchange of New York.

At the close in New York, however, advances were made in the absence of support from London, that market being closed for the Whitsuntide holidays. The usual weekend covering was coupled with active buying participated in by both trade and commission house factors. A firmer market for actuals, due to a reduction in the number of c. i. f. offerings from the Far East at higher costs, was a factor in the market's strength.

British Capitalists Plan To Grow Rubber in Mexico

Charles Hudson, J. L. Graham and E. E. Park, British capitalists who have extensive rubber holdings in Central and South America, have arrived in Mexico City from New York. It is reported that they are planning to seek concessions from the Mexican government to exploit rubber in that country.

They are expected to invest upward of $20,000,000 in plantations in Mexico, presumably on the Isthmus of Tehuantepac in the States of Tobasco and Chiapas. The three capitalists are reticent concerning their plans, but say that they will spend several weeks in Mexico City and then visit prospective rubber producing zones.

NEW HOME IS PROPOSED FOR RUBBER EXCHANGE

Construction of a building to house several of the commodity exchanges now in operation in New York has been discussed at a series of conferences of exchange officials, according to an announcement made on May 17. Exchanges whose executives were represented included the New York Coffee and Sugar Exchange, the Rubber Exchange of New York, the New York Cocoa Exchange and the National Raw Silk Exchange.

Present plans call for the erection of the proposed commodity exchange center on the site of the Coffee and Sugar Exchange and possibly on an adjoining plot of ground. In the building would be provided space for the trading floors and offices of the various exchanges.

HARGIS TELLS PROGRESS OF GOODYEAR PLANTATIONS

How civilization is penetrating the jungle to obtain rubber for American consumption was vividly told by O. D. Hargis, general manager of the Goodyear Plantation Company, on his arrival at Akron from Sumatra this month. Goodyear's 30,000-acre Wingfoot plantation is being rapidly transformed from a virgin tropical jungle into a rubber plantation by an army of 6,000 coolies, he said, and the task should be completed in three years.

"Eighteen months ago," he related, "the land was a heavily forested section of tropical jungle. Today a fairly good road runs through the property; telephone communication has been established; offices and warehouses have been built; temporary houses for staff and labor are scattered over the first development; a hospital with a European doctor is functioning; a regular launch and lighter system of transport is in use on the river; ten miles of narrow-gauge railroad is in operation; thousands of acres of heavy jungle have been felled and cleared and planting started."

Mr. Hargis was incorrectly referred to in the last issue of THE RUBBER AGE as being connected with the United States Rubber Company.

Rubber Firm Moves

Paul Elbogen & Company, Inc., have announced their removal to new offices at 50 East 42nd Street, New York City, where they will have a direct wire connection with the Rubber Exchange of New York. In addition to being a member of the Rubber Exchange, this firm is a member of the Rubber Exchange Clearing House, and the Rubber Trade Association of New York.

Closing Prices on Rubber Exchange of New York, Inc.

FROM MAY 6 TO MAY 18, 1929

		Spot	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Sales*
May	6	20.10	20.10	20.40	20.60	20.80	20.90	21.00	21.10	21.30	21.40	21.60	21.80	21.90	542
	7	20.70	20.70	21.00	21.20	21.40	21.60	21.70	21.80	21.90	22.10	22.30	22.40	22.50	1,331
	8	21.20	21.20	21.50	21.70	21.90	22.10	22.20	22.30	22.50	22.70	22.80	23.00	23.10	1,243
	9	20.90	20.90	21.10	21.50	21.60	21.80	22.00	22.10	22.20	22.40	22.50	22.70	22.80	570
	10	20.80	20.80	21.10	21.30	21.50	21.60	21.70	21.80	21.90	22.10	22.20	22.40	22.50	449
	11	21.20	21.20	21.30	21.40	21.60	21.80	21.90	22.00	22.10	22.30	22.40	22.60	22.70	174
	13	21.80	21.80	22.10	21.30	21.50	21.70	21.80	21.90	23.00	23.30	23.40	23.60	23.70	1,516
	14	22.40	22.40	22.60	22.80	23.00	23.40	23.40	23.50	23.60	23.90	24.00	24.10	24.20	1,288
	15	22.00	22.00	22.10	22.50	22.70	22.80	22.90	23.10	23.20	23.30	23.40	23.60	23.70	2,101
	16	22.00	22.00	22.20	22.50	22.80	23.00	23.10	23.20	23.40	23.40	23.60	23.80	23.90	1,015
	17	22.70	22.70	22.90	23.20	23.50	23.60	23.80	24.00	24.20	24.30	24.50	24.60	24.70	1,572
	18	23.20	23.20	23.40	23.70	24.00	24.20	24.30	24.40	24.60	24.70	24.90	25.00	25.10	692

*In lots of 2½ tons each

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Rubber Goods and Specialties

Sponge Rubber Plant

This sponge rubber plant recently introduced by Reliance Rubberware, Ltd., 40 Aldersgate Street, London, England, is a novelty in the sponge rubber field. It is distinctly ornamental and will not, of course, be subject to deterioration of any sort. It

is particularly designed for use in decorating public places, such as restaurants, hotels, shops, etc. It is colored realistically and gives every impression of being an actual growing plant.

Bathing Cap

Because of its wide turned-up brim, higher in front than at back, this close fitting turban style bathing cap is said by its manufacturers, the Omo Manufacturing Company,

Middletown, Conn., to serve the purpose of two caps. A large single daisy acts as a trim, and the cap is further trimmed with two narrow flat ruffles. It is heavy weight and full size and is packed one dozen to a box.

Mohawk Super-Tube

As a companion to the Mohawk Flat Tread Special balloon casing, the Mohawk Rubber Company, Akron, O., is introducing its new Mohawk Special Quality tube in the same 20 sizes. This tube is colored an attractive maroon, and its extra thick, heavy, uniform pure rubber wall is an assurance of long wear. It is packed in an artistic two-piece blue, gold, red and black colored box, protected by a cellophane wrapper. It may, therefore, be displayed with the box opened without any fear of deterioration.

Rubber-Neck Hand Stamp

Under the name of the Rubber-Neck hand stamp, the Lake Manufacturing Company, 1910 Caddo Street, Dallas, Texas, is introducing to the office appliance market a rubber stamp with an entirely novel mount. A coiled spring is constructed into the hard rubber neck of the stamp to add strength, but this in no way interferes with the flexibility of the handle. The handle may be moved backward and forward while the impression is being made, assuring a level impression with speed and convenience. This hand stamp is designed to reduce the jar and also to allow the stamp itself to hit squarely on the printing surface, regardless of the angle at which the impression is made.

Circus Parade Balloon

A novelty in toy rubber balloons is being featured by the Anderson Rubber Company, Akron, O., in the form of a circus parade balloon. A notable feature about this balloon,

according to the manufacturers, is that, while balloons have been printed with vertical stripes, this is the first time a balloon has ever been printed completely around the center in one continuous picture. It makes a very attractive toy, especially as it is capped with a circus tent design.

Hinson Cowl Protector for Ford Cars

DESIGNED for the use of garages and service stations in protecting the cowl from the drippings of gasoline that no station attendant can prevent, this item is being offered by the Hinson Manufacturing Company, Waterloo, Ia. It also prevents the gasoline hoze nozzle from scratching or marring the finish on the cowl. The Hinson cowl protector is made of thick, heavy, durable gray felt and rubber coated cloth with the edges neatly bound of the same material. It takes only a second to throw over the cowl and fits over the opening without effort. This large size for service stations is sold for $1.50, and a smaller size for the car owner is sold for $1. On both sizes there is a metal ring on the opening.

FIRESTONE PLANT BUYS TRI-MOTORED AIRPLANE

Purchase of a Ford tri-motored airplane for the use of the officials of the Firestone Tire & Rubber Company was announced April 30 by Harvey Firestone, Jr., vice-president of the Firestone Plantations Company. The plane will be available for quick trips to Los Angeles, Hamilton, Ont., Fall River and Bedford, Mass., and other places where the Firestone company has interests, and in the winter it will be used for trips to and from Miami, Fla.

The ship, which has already been delivered, will carry 14 passengers and has dual control. The delivery price on Ford tri-motored planes is understood to be approximately $60,000. It will be kept at the Akron municipal airport and a hangar will be erected for it in the future.

BALDWIN RUBBER COMPANY BUYS MICHIGAN FACTORY

Acquirement of the Owosso, Mich., plant of the Michigan Rubber Company by the Baldwin Rubber Company, Pontiac, Mich., has been announced by Samuel C. Clark, president, and C. R. Talbot, treasurer, of the latter concern. The Baldwin Rubber Company manufactures floor mats and running board coverings for automobiles.

The Owosso factory has 20,000 square feet of floor space, but its production at present is only one-fourth that of the Pontiac plant. There are, however, ample facilities for expansion.

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The CARTER BELL MFG CO

CARTER BELL STANDARD SINCE 1903 RUBBER SUBSTITUTES

150 Nassau Street New York

LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber - Cottons and Fabrics

NEW YORK, MAY 20, 1929

COTTON

EXCEPT for occasional rallies after unfavorable weather reports, the tendency in the cotton market has been toward lower levels during the past fortnight. The government's weekly weather and crop bulletin for the first week of the period caused one broker to remark that "it is doubtful if a more one-sided report was ever issued by the bureau." Frequent rains, wet soil, high winds, cool weather with low night temperatures to retard germination and development of the young plant,—all these were cited in confirmation to private reports of a serious setback to the cotton crop.

More optimistic news developed in the course of the second week of the fortnight, relief being afforded most of the dry areas of Texas and Oklahoma while rains in other sections let up for the time being. Much additional replanting has been made necessary in scattered areas of the cotton belt, but improvement on the whole is generally admitted.

High, low and closing prices quoted on May 22 were as follows:

	High	Low	Close	Close
		May 20		May 4
May	19.79	19.62	19.64	19.65
July	19.99	18.82	18.85	18.91
Sept.	——	——	18.77	19.06

Tire Fabrics

The tire industry is estimated by the Rubber Manufacturers Association to have consumed a total of 28,317,800 pounds of cotton fabric during the month of March and 81,792,561 pounds in the entire first quarter of the year. Tire fabrics during the fortnight just ended sold in about average volume, larger orders being infrequent. Both Americans and carded and combed Egyptians were of interest. Late prices follow:

CORD			
Peeler, carded, 23/5/3	lb.	.47½@	.48½
Peeler, carded, 23/4/3	lb.	.48½@	.49½
Peeler, carded, 15/3/3	lb.	.45 @	.45½
Peeler, carded, 15/3/3	lb.	.45½@	.46
Egyptian, carded, 23/5/3	lb.	.54 @	.54½
Egyptian, combed, 23/5/3	lb.	.58 @	.59
CHAFERS			
Carded, American, 8 oz.	lb.	.40½@	.41½
Carded, American 10 oz.	lb.	.41½@	.42½
Carded, American, 12 oz.	lb.	.41½@	.45
Carded, American, 14 oz.	lb.	.40 @	.46
LENO BREAKER			
Carded, American, 8¼ oz.	lb.	.41 @	.46
Carded, American, 10¼ oz.	lb.	.41 @	.46
SQUARE WOVEN			
Carded American, 17¼ oz. 22-11 ply	lb.	.47 @	.48
Carded American, 17¼ oz. 16-ply	lb.	.40 @	.41

Sheetings

Sheetings were quiet during the past two weeks with prices a shade lower. Late quotations, as reported by the Textile Brokers Association, Inc., were as follows:

40-inch, 2.50-yard	yd.	.12⅛@	.12¾
40-inch, 2.85-yard	yd.	@	.10⅞
40-inch, 3.15-yard	yd.	.11⅛@	.11⅝
40-inch, 3.60-yard	yd.	@	.09⅝
40-inch, 3.75-yard	yd.	.08¼@	.08¾
40-inch, 4.25-yard	yd.	@	.07¼

Ducks

Some of the mills manufacturing cotton duck that have been closed due to labor troubles reopened at the end of the period and buyers are awaiting such market developments as may result. Business in cotton duck was comparatively quiet during the fortnight without change in prices. Latest quotations were as follows:

Belting and Hose	lb.	@	.38
Enameling	lb.	.35 @	.36
Single filling	lb.	.14¾@	.16½
Double filling	lb.	.17½@	.18½

RECLAIMED RUBBER

From its regular questionnaire reports for the first quarter of 1929, the Rubber Manufacturers Association estimates production of reclaimed rubber during those three months at 57,582 long tons. Consumption in January, February and March is figured to have been 60,113 long tons. According to the monthly statistics of the association, April production and consumption were 19,899 tons and 20,191 tons respectively. Late price quotations were as follows:

High Tensile			
Super-Reclaim No. 1 Black	lb.	.13 @	.13½
Super-Reclaim No. 2 Black	lb.	.12 @	.12½
High Tensile Red	lb.	.13 @	.13½
Shoe			
Unwashed	lb.	.07¼@	.07½
Washed	lb.	.10 @	.10¼
Tube			
No. 1 (Floating)	lb.	.14 @	.14½
No. 2 (compounded)	lb.	.11 @	.11½
Tires			
Black, washed		.09¾@	.10¼
Black, unwashed		.08 @	.08½
Black, selected tires	lb.	.08½@	.09
Dark Gray	lb.	.10 @	.10½
Light Gray	lb.	.12 @	.12½
White	lb.	.13 @	.13½
Truck, Heavy Gravity	lb.	.07 @	.07¼
Truck, Light Gravity	lb.	.07½@	.07¾
Miscellaneous			
Mechanical Blends	lb.	.07 @	.07½
Red	lb.	.12½@	.13

Scrap Rubber

The Rubber Manufacturers Association questionnaire indicates that reclaiming plants consumed 71,001 long tons of scrap rubber during the first quarter of 1929, as compared with 66,567 tons for the last quarter of 1928. Inventory at the end of March had been cut down to 59,135 tone as against 68,869 tons at the close of December. Late prices were as follows:

(Prices to Consumer)			
Auto tire peelings	ton	42.50	@45.00
Standard White auto	ton	47.50	@50.00
Mixed auto	ton	26.00	@27.00
Bicycle tires	ton	20.00	@22.50
Clean solid truck tires	ton	22.00	@24.00
Boots and shoes	cwt.	1.45	@ 1.50
Arctics, untrimmed	lb.	.00¾@	.00⅞
Inner tubes, No. 1	lb.	.07½@	.07¾
Inner tubes, No. 2, compounded	lb.	.04¼@	.04⅝
Inner Tubes, Red	lb.	.05¼@	.05⅝
Air Brake Hose	ton	34.00	@35.00
Rubber Hose	ton	17.50	@20.00

CRUDE RUBBER

DESPITE bearish statistics regarding the movement of crude rubber, the New York market has changed for the better and developed a strong tone in the past fortnight. Instead of a generally predicted reduction of about 5 per cent from the record domestic consumption for March, the figures for April topped the previous month with a new peak absorption of 47,521 long tons. This report was construed as extremely bullish, and crude rubber advanced more than three cents a pound in price during the fortnight.

Crude rubber consumption by American manufacturers continued on a record breaking scale during the first half of May, according to advices received from the large tire making centers by members of the Rubber Exchange of New York. Consumption approximated 23,000 tons, says a Rubber Exchange release, which would place the full month's consumption close to the record figure established during April.

"The trade's statisticians," the Rubber Exchange reports, "are inclined to place the month's consumption in the neighborhood of 45,000 tons. In that event, crude consumption for the first five months of the year will total 221,847 tons, an increase of almost 48,000 tons over the corresponding period of 1928, when the consumption totaled 173,898 tons. A consumption of 45,000 tons this month would far outweigh the consumption figures for any previous May." Some authorities, however, are optimistic enough to place consumption for the current month at as much as 10 per cent above this figure.

Prices on the New York outside market on May 20 were as follows:

Plantations—		
Ribbed Smoked Sheets—		
Spot-May	.23⅝@	.23¾
June	.23⅝@	.24
July-Sept.	.24¼@	.24½
First Latex, crepe spot	.23⅞@	.24¼
Amber Crepe, No. 2	.21¾@	.22
Amber Crepe, No. 3	.21½@	.21¾
Amber Crepe, No. 4	.21¼@	.21½
Brown Crepe, Clean, thin	.21½@	.21¾
Brown Crepe, specky	.21¼@	.21½
Liquid Latex, per gal.	1.00	
Paras		
Up-river Fine	.23¾@	.24¼
Up-river Medium	Nominal	
Up-river Coarse	.13¾@	.14¼
Acre Bolivian, fine	.24¼@	.24¾
Caucho Ball, Upper	.13¾@	.14¼
Islands, fine	Nominal	
Centrals—		
Central, scrap	@	.13
Esmeraldas	@	.13
Balata—		
Block, Colombia	Nominal	
Block, Ciudad	.54 @	

LONDON MARKET

(Whitsuntide holidays)

SINGAPORE MARKET

(Holiday)

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■ ■ ■

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LATE RUBBER CHEMICAL PRICES

Accelerators — Colors — Softeners — Compounding Materials

NEW YORK, MAY 20, 1929

PRICE quotations on rubber chemicals and compounding ingredients were unaffected by the provisions of the proposed new tariff schedules and remain practically the same as recorded a fortnight ago. With the rubber industry apparently about to set a new record for a half year's production, the demand for rubber chemical supplies has continued steady in proportion.

Factory expansions are going ahead with several new additions to present facilities being rushed to completion. New chemical materials are still being offered to the rubber industry, the latest being Witco Softener No. 20, which is reported as having met with a good reception soon after its introduction.

ACCELERATORS

Organic			
A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-20	lb.	.64 @	.68
Aero-X	lb.	.60 @	.65
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums, f.o.b. works	lb.	.15 @	.16¼
Cryiene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolylguanidine	lb.	.42 @	.52
Diphenylguanidine	lb.	.30 @	.36
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde Aniline	lb.	.34 @	.44
Grasselerator 102	lb.		
Grasselerator 552	lb.		
Grasselerator 808	lb.		
Grasselerator 833	lb.		
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.62½@	.65
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.35 @	.45
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.80
Para-Nitrosodimethylaniline, f.o.b. works	lb.	.92 @	.96
Piperidine-Piperidyldithio-Carbamate	lb.	4.45 @	4.60
R & H 40	lb.	.40 @	.42½
R & H 50	lb.	.40 @	.42½
R & H 397	lb.	.75 @	.77½
Safex	lb.	1.20 @	1.25
Tensilac, No. 39	lb.	.50 @	.52½
Tensilac, No. 41	lb.	.50 @	.52½
Thermlo F	lb.	.50 @	.55
Thiocarbanilide, drums	lb.	.26½@	.28½
Thionex	lb.		
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.62½
Ureka	lb.	.75 @	1.00
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Waxene	lb.	.30 @	.32
Z 88	lb.	.50 @	.60
Inorganic			
Lead, sublimed blue	lb.	.08¼@	—
Lead, white	lb.	.10½@	.12½
Litharge, domestic	lb.	.09 @	—
Magnesia, calcined, light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)			
Blues			
Prussian	lb.	.35 @	.40
Ultramarine	lb.	.06 @	.30
Browns			
Sienna, Italian	lb.	.05½@	.12½
Umber, Turkey	lb.	.04½@	.07
Greens			
Chrome, light	lb.	.27 @	.31
medium	lb.	.28 @	.31
dark	lb.	.31 @	.34
Chromium Oxide, bbl.	lb.	.31 @	.38
Reds			
Antimony crimson, 15/17	lb.	.44 @	.50
sulfur free	lb.	.52 @	.60
golden 15/17 F.S.	lb.	.20 @	.25
Indian English	lb.	.08 @	.12
Domestic (Maroon)	lb.	.08 @	.12
Oximony	lb.	.13¼@	—
Red oxide, pure	lb.	.10 @	.12
Venetian red	lb.	.03 @	.06
Vermillion, quicksilver, English	lb.	1.95 @	—
Whites			
Lithopone, Akcolith	lb.	.05 3/5@	.06
Lithopone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanox	lb.	.09½@	.10
Cal. Base Pigment	lb.	.10 @	.10½
Zinc Oxide—American Process			
American Azo: ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅝@	.06⅞
Zinc Oxide—French Process			
White seal	lb.	.11⅞@	—
Green seal	lb.	.10⅞@	—
Red Seal		.09⅞@	—
Yellows			
Chrome	lb.	.16½@	.17
Ocher, French medium	lb.	.02 @	.03
domestic	lb.	.01⅝@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate	lb.	.10½@	.12
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.03½@	.05
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Blacks			
Arrow "Aerfloted"	lb.	.08½@	.12½
Bone Black	lb.	.07 @	.08½
Carbon, compressed	lb.	.08½@	.12½
Carbon, uncompressed	lb.	.08 @	.12
Drop Black	lb.	.06 @	.10
Fumonex	lb.	.06 @	.09
Gastex	lb.	.04½@	.08
Lamp Black	lb.	.12 @	.40
Micronex	lb.	.09 @	.13
Velvetex carbon	lb.	.04½@	.06
Blanc fixe dry f.o.b. works	lb.	.03½@	.03⅝
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk	ton	12.00 @	14.00
Clay, China, domestic	ton	8.00 @	9.00
Aerfloted Suprex	ton	10.00 @	22.00
Congaree, c. l. f.o.b. mine	ton	9.00 @	—
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Tensulite		15.00 @	—
Glues, extra white	lb.	.22 @	.26
medium white	lb.	.20 @	.24
Magnesia, carbonate	lb.	.08¾@	.11
Mica, powdered	ton	65.00 @	80.00
Rotten Stone (powdered)	lb.	.02½@	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.30 @	3.70
Talc, domestic	ton	12.00 @	15.00
Whiting, commercial	cwt.	.85 @	1.00
English cliffstone	cwt.	1.50 @	—
Superfine	ton	10.00 @	12.00
Witco	ton	12.00 @	—
Wood pulp XXX	ton	45.00 @	—
Wood pulp X	ton	25.00 @	—
Zinc Carbonate	lb.	.09½@	.10½
Zinc Stearate	lb.	.24 @	.25

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Montezuma, solid	ton	28.00 @	36.00
Montezuma, granulated	ton	32.00 @	42.00
Paradura	ton	62.50 @	65.00
Pioneer, MR, solid	ton	42.00 @	45.00
Pioneer-granulated	ton	52.00 @	55.00
R & H Hydro-Carbon	ton	27.05 @	29.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	38.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulfuric, 60 degrees	ton	10.50 @	11.50
66 degrees	ton	15.00 @	16.00
Tartaric, crystals	lb.	.37 @	.38
Acids, Fatty			
Stearex	lb.	.15½@	.20
Stearic, double pressed	lb.	.17 @	.22
Alkalies			
Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.40 @	
Oils			
Corn, refined, bbls.	lb.	.11 @	.11½
Cottonseed, crude		.08½@	.08¾
Cycline	gal.	.27 @	.34
Degras (c.l. 100 bbls.)	lb.	.03¾@	—
Less c. l. (10-25 bbls.)	lb.	.04 @	—
Lots less than 10 bbls.	lb.	.04¼@	.04½
Fluxrite	lb.	.05 @	.06
Hexalin	lb.	.60 @	—
Acetate	lb.	.70 @	—
Linseed, Raw C.L. bbl.	lb.	.09½@	.10
Palm Lagos	lb.	.07¼@	.07½
Niger	lb.	.07¾@	.08
Vansulol	lb.	.10½@	—
Para-Flux	gal.	.17 @	—
Petrolatum, white	lb.	.08 @	.08½
dark amber	lb.	.03⅝@	.03¾
Pine, steam distilled	gal.	.65 @	.70
Witco Softener (f.o.b. works)	lb	.02 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	9.00 @	10.00
Rosin, grade K, 280 lb.	bbl.	8.55 @	—
Pigmentar	gal.	.33 @	.41
Solvenol, drums	gal.	.48 @	.50
Tarol, drums	gal.	.30 @	.35
Tar Retort, 50 gal.	bbl.	12.50 @	13.00
Solvents			
Acetone, pure	lb.	.13 @	
Alcohol denatured, No. 1 bbls.	gal.	.37½@	.44½
Benzol, 90%	gal.	.28 @	—
Carbon bisulphide	lb.	.05½@	.06¼
Carbon tetrachloride	lb.	.06¼@	.07
Motor gasoline, steel bbls.	gal.	.17 @	—
Naptha, solvent	gal.	.35 @	.40
Turpentine, spirits	gal.	.60 @	.64
wood	gal.	.50 @	.54
Waxes			
Beeswax	lb.	.56 @	.58
Carnauba	lb.	.33 @	—
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.07 @	.07½
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Paraffin (c. l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.03¾@	
White crude scale 124/126	lb	.04 @	
Refined, 125/127	lb.	.05⅝@	
Refined, 128/130	lb.	.05½@	
Refined, 135/137	lb.	.07¾@	
Refined, 138/140	lb.	.08¼@	
Miscellaneous			
RSL Mold Solution	gal.	.75 @	1.00

ANTI-OXIDANTS

Albasan	lb.	.70 @	.75
Antox	lb.		
Neozone	lb.		
Oxynone	lb.	.68 @	.80
Resistox	lb.	.54 @	.57
Stabilite	lb.	.64 @	—
VGB	lb.	.55 @	.66

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03¼@	.03½
Sulfur flour, Refined, 100% pure (bags)	cwt.	2.40 @	2.75
Commercial (bags)	cwt.	1.75 @	2.10

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

APRIL saw new records made in rubber consumption, rim output and pneumatic casing production. It brought to completion the greatest four-month period that the rubber industry in the United States has experienced and which is generally accepted as beginning the biggest year in rubber history. The April consumption of 47,521 long tons of crude rubber was a surprise to some authorities in the trade who had estimated it at a figure 5,000 tons lower, and certain of these same authorities are now joining the others who predict that May consumption will pass the 50,000-ton mark.

"The automobile tire manufacturing industry is in an extremely strong position," concludes the Standard Statistics Company of New York, as the result of an extensive field survey. "Production is at the highest rate in the history of the trade, taxing the capacity of the principal plants. Shipments are also breaking all previous records and probably will be of sufficient size during the next few months to absorb not only the comparatively large stock of casings now in the hands of manufacturers and dealers, but also a continued heavy volume of new production. The majority of manufacturers do not look for a definite recession in output before Fall, and even the most conservative members of the trade are of the opinion that there will be no need for a reduction in plant operation until the end of August, at the earliest."

Latest figures covering imports and exports from the leading producing and consuming countries have been added to the appropriate places in the following tables.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

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U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,086	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1926:							
July	35,820	33,061,281	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,032	39.25	1,437	1,519,870	47.20	35,675
Oct.	29,746	25,320,558	38.49	1,366	1,316,270	43.03	28,110
Nov.	39,155	34,890,536	39.78	1,482	1,411,517	42.51	37,673
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
1927:							
Jan.	43,340	36,753,719	37.86	1,525	1,444,734	42.28	41,815
Feb.	28,337	23,110,257	36.41	2,451	2,277,297	41.47	25,886
Mar.	35,515	28,693,016	36.07	2,763	3,249,665	52.50	32,752
Apr.	46,202	37,321,505	36.06	1,575	1,428,425	40.48	44,627
May	36,518	30,984,377	37.88	2,782	2,501,562	40.14	33,736
June	33,045	27,850,014	37.62	1,775	1,550,592	39.00	31,270
July	37,677	31,678,259	37.53	1,958	1,560,853	35.59	35,719
Aug.	32,810	26,396,931	35.92	1,809	1,382,768	34.12	31,001
Sept.	33,301	25,314,412	33.94	3,500	3,036,929	38.74	29,801
Oct.	30,184	22,163,282	32.78	2,513	2,042,713	36.29	27,671
Nov.	38,592	27,395,428	31.69	2,469	2,014,196	36.43	36,123
Dec.	30,737	22,213,574	32.26	2,655	2,245,754	37.77	28,082
1928:							
Jan.	39,107	30,278,444	34.56	1,988	1,734,990	38.95	37,119
Feb.	33,663	27,763,655	36.82	2,738	2,229,589	36.35	30,925
Mar.	40,611	32,103,042	35.29	3,718	2,587,435	31.07	36,893
Apr.	37,935	27,287,266	32.11	2,272	1,415,024	27.80	35,663
May	31,059	19,058,672	27.39	2,399	1,386,307	25.80	28,660
June	27,765	14,121,219	22.71	2,621	1,400,697	23.86	25,144
July	31,258	14,144,765	20.20	3,087	1,451,446	20.99	28,171
Aug.	31,204	12,860,150	18.39	2,377	1,084,646	20.37	28,827
Sept.	39,235	16,512,019	18.50	3,038	1,384,148	20.34	36,797
Oct.	44,058	18,200,332	18.44	2,405	1,085,407	20.15	41,653
Nov.	36,519	14,878,441	18.19	2,788	1,207,089	18.52	33,731
Dec.	43,511	17,580,966	18.04	2,738	1,165,743	19.00	40,773
1929:							
Jan.	57,564	22,872,943	17.74	3,663	1,773,401	21.61	53,901
Feb.	64,265	24,760,111	17.20	2,955	1,374,783	20.77	61,310
Mar.	50,604	20,380,905	17.98	4,218	2,094,037	22.16	46,386
Apr.*	52,527	24,162,634	20.54				
May							
June							

*Receipts at New York and Massachusetts.

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1922	1923	1924	1925	1926	1927	1928	1929
Jan.	16,938	30,106	29,058	29,638	32,196	31,518	34,403	43,002
Feb.	14,767	30,149	25,736	19,761	31,136	30,137	33,702	41,594
Mar.	21,408	36,629	28,385	33,498	32,936	36,141	35,688	44,730
Apr.	19,294	29,085	27,129	34,139	32,596	35,871	32,772	47,521
May	23,246	36,155	25,845	35,322	29,364	34,592	37,333	
June	31,713	24,272	22,753	35,822	28,598	33,801	37,676	
July	24,522	17,685	23,396	36,053	27,577	29,219	37,407	
Aug.	29,631	20,359	28,982	35,909	34,533	33,460	42,927	
Sept.	24,410	17,594	31,497	31,691	32,904	27,214	39,882	
Oct.	26,881	21,321	31,520	29,047	29,836	26,790	40,857	
Nov.	24,950	20,487	27,289	28,853	28,080	26,792	37,461	
Dec.	25,070	31,902	27,199	28,748	26,293	25,492	31,232	
Totals	282,560	305,694	328,769	388,481	366,149	371,027	441,340	

Figures on Quarterly Basis

Quarter	1921	1922	1923	1924	1925	1926	1927	1928
Jan./Mar.			96,776	87,609	95,263	94,301	99,216	103,558
Apr./June	65,463	127,360	89,493	75,674	104,099	87,109	103,242	103,500
July/Sept.			55,621	83,813	99,493	93,793	89,210	117,573
Oct./Dec.	105,962	155,067	63,617	92,656	85,789	83,212	80,860	117,597
Totals	171,425	282,427	305,507	339,752	384,644	358,415	372,528	442,227

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
Feb. 23	9,610	559	1,556	55	11,780
Mar. 2	10,200	1,510	3,744	55	15,509
Mar. 9	8,281	1,974	1,974	9	12,238
Mar. 16	7,370	572	1,977	9	9,928
Mar. 23	8,757	754	1,673	.....	11,184
Mar. 30	7,333	923	1,596	45	9,897
Apr. 6	9,234	1,037	1,975	10	12,256
Apr. 13	7,061	458	1,935	.....	9,454
Apr. 20	6,863	740	1,886	112	9,601
Apr. 27	7,808	1,212	1,723	108	10,851
May 4	6,573	888	2,374	166	10,001
May 11	6,798	852	1,148	213	9,011
May 18	8,026	1,011	2,028	126	11,191

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1924																																
October	43	43	—	43¼	42¾	42¾	42½	42½	42½	—	42⅝	—	42½	42⅝	42⅝	43⅛	—	42½	42⅝	43¾	42⅛	42⅜	42⅝	42⅝	42⅛	42⅜	42⅜	42⅜	42⅜	42⅜	—	42½
November	41	41¼	41	41¼	41½	41½	—	41¾	41¾	42¾	41¾	41½	41¾	—	40⅝	40⅝	40½	41¾	42⅛	39	—	41¾	41¾	39½	—	39	87	87	87	—	—	88½
December	36⅝	37½	37½	37½	—	37	37	37⅛	37	37	37½	—	37½	37⅜	37⅝	38	38	39½	38	38	39½	38½	38⅝	38⅝	—	39	38¾	38¾	38½	38½	—	38¼
1927																																
January	—	38½	39	39¼	39¾	40⅜	—	40⅜	—	40½	40⅜	40⅜	40	39⅞	39¾	—	39¾	38¾	39	38¾	38¾	38⅝	38⅝	38¾	38	38	38⅝	38½	38	38	38	38⅝
February	37⅜	37⅝	37½	37½	—	37	—	37⅝	37⅝	—	37⅝	37⅝	—	38⅛	38⅛	38⅛	38⅛	38⅛	38⅛	38⅛	38⅛	38⅛	38⅛	39	39	39	39⅜	39¼	39¼	—	—	39¼
March	39⅜	40	40¼	41	41	41	—	40⅝	40⅝	40⅝	41½	41⅝	41⅝	41⅝	41¾	41⅝	41¾	41½	41½	41½	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾
April	41⅛	41½	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
May	—	40½	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
June	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
July	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
August	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
Sept.	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
Oct.	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
Nov.	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
Dec.	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
1928																																
January	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
February	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
March	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
April	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
May	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
June	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
July	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
August	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
September	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
October	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
November	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
December	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
1929																																
January	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
February	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
March	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
April	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
May	—	40⅝	40¾	40¾	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents	1929 Cents
Jan.	18.82	32.78	25.86	36.71	79.50	38.75	40.25	20.14
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75	23.97
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	26.82	24.55
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	18.97	21.18
May	15.25	27.39	18.89	58.47	47.75	40.76	18.99	——
June	15.11	26.88	18.81	77.26	42.50	37.25	19.59	——
July	14.67	26.10	22.16	103.16	41.03	34.87	19.40	——
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	19.46	——
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	18.47	——
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	18.83	——
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	18.26	——
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	17.97	——
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	22.48	——

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Feb.	Mar.	Apr.	May	Day	Feb.	Mar.	Apr.	May
1	11⅛	12⅞	11⅛	9⅞	17	—	—	10¼	11⅝
2	11	13½	11¼	10	18	12½	12	10	—
3	—	—	11⅛	10	19	12½	11⅞	10	—
4	10¾	13⅛	10⅞	—	20	12⅝	11½	10⅛	—
5	11	12¾	10⅞	—	21	12½	11½	—	—
6	10⅞	12¾	11	10⅛	22	13	11½	9⅞	—
7	10⅞	12⅝	—	10⅜	23	13⅛	11¼	10⅛	—
8	10⅞	12⅝	11	10⅝	24	—	—	10⅛	—
9	11	12⅝	11	—	25	13⅛	11⅛	9⅞	—
10	—	—	11	10½	26	13¼	11	10	—
11	11⅛	12¾	10⅞	10⅝	27	13⅛	11⅛	10	—
12	11	12⅝	10⅞	—	28	12⅞	11	—	—
13	11¼	12⅝	10⅝	11	29	—	—	9⅞	—
14	11⅝	12¼	—	11⅝	30	—	—	9⅞	—
15	11⅞	12¼	10⅞	11½	31	—	—	—	—
16	12⅝	12	10⅝	11⅛					

Average Monthly Price Per Pound

Month	1927 Pence	1928 Pence	1929 Pence	Month	1927 Pence	1928 Pence	1929 Pence
Jan.	19.410	19.310	9.942	Aug.	17.202	9.300	——
Feb.	19.021	15.713	11.875	Sept.	16.293	8.530	——
Mar.	20.125	12.736	12.135	Oct.	16.366	8.807	——
Apr.	19.897	8.864	10.490	Nov.	18.159	8.596	——
May	19.769	8.845	——	Dec.	19.690	8.570	——
June	17.880	9.293	——	Average			
July	16.770	9.312	——	for Year	18.375	10.656	——

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Apr.	May	Day of Month	Apr.	May	Day of Month	Apr.	May
1	20.75	19.55	11	20.65	19.65	21	——	——
2	20.75	19.65	12	20.70	——	22	19.85	——
3	20.40	19.75	13	20.75	19.80	23	19.85	——
4	20.55	18.90	14	——	19.65	24	20.25	——
5	20.65	——	15	20.60	19.60	25	19.90	——
6	20.55	18.65	16	20.55	19.75	26	19.75	——
7	——	18.65	17	20.45	19.70	27	19.85	——
8	20.65	19.60	18	20.40	——	28	——	——
9	20.75	19.60	19	20.30	——	29	19.40	——
10	20.55	19.55	20	20.05	——	30	19.45	——
						31	——	——

Average Monthly Price Per Pound

Month	1927 Cents	1928 Cents	1929 Cents	Month	1927 Cents	1928 Cents	1929 Cents
Jan.	13.42	19.12	20.22	Aug.	20.04	19.28	——
Feb.	14.10	18.40	20.21	Sept.	21.95	18.67	——
Mar.	14.32	19.38	20.19	Oct.	20.22	19.62	——
Apr.	14.75	20.63	20.29	Nov.	20.22	19.84	——
May	16.07	21.58	——	Dec.	19.58	20.22	——
June	16.85	21.50	——	Average			
July	18.00	21.36	——	for Year	17.49	19.97	——

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At End of	ON HAND			AFLOAT			ON HAND AND AFLOAT		
	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	76,172	110,244	76,342	45,312	41,256	78,596	121,484	151,500	154,938
Feb.	91,186	108,955	90,058	42,166	43,316	63,825	133,352	152,271	153,883
March	85,740	114,061	100,536	49,600	39,324	56,476	135,340	153,385	157,012
April	92,757	113,083	107,659	38,963	33,986	55,409	131,720	147,069	163,068
May	94,563	105,356		44,181	34,374		138,744	139,730	
June	89,250	90,198		47,233	40,001		136,483	130,119	
July	98,469	43,242		40,687	42,304		139,056	125,546	
Aug.	96,148	68,994		40,937	51,875		137,085	120,869	
Sept.	97,829	68,851		37,966	48,566		135,793	117,417	
Oct.	97,452	66,421		42,804	41,571		140,256	107,992	
Nov.	101,034	61,956		37,076	68,119		138,110	130,075	
Dec.	100,130	66,166		47,938	68,764		148,068	134,930	

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At end of:	1921	1922	1923	1924	1925	1926	1927	1928	1929
Jan.	66,573	67,252	73,498	57,460	27,172	9,994	54,994	66,524	25,191
Feb.	59,439	67,623	70,483	56,732	23,425	10,004	58,826	62,964	25,554
Mar.	63,913	66,670	63,438	55,647	18,104	13,127	63,055	58,272	28,214
Apr.	68,759	68,637	58,770	54,559	12,949	18,773	66,897	53,425	
May	70,403	70,146	54,439	51,615	5,895	20,384	67,169	44,628	
June	69,408	71,597	51,050	51,115	5,318	23,984	63,902	38,756	
July	71,065	71,515	49,937	52,073	4,258	27,727	63,717	35,429	
Aug.	73,211	72,112	58,427	49,700	4,619	30,165	64,491	32,084	
Sept.	72,175	70,977	54,523	44,011	5,453	35,077	68,236	31,440	
Oct.	69,229	68,536	58,891	37,523	5,086	42,138	69,569	24,207	
Nov.	70,786	68,548	60,074	33,593	3,869	44,057	67,050	17,775	
Dec.	69,792	72,299	60,246	29,488	5,697	48,918	63,793	19,815	

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1928					
May	52,015	50,837	48,705	44,628	——
June	43,716	42,683	41,185	40,083	38,611
July	36,915	35,925	35,238	35,445	——
August	34,294	33,649	32,591	32,815	——
September	31,933	31,477	32,110	31,884	31,462
October	29,525	27,370	26,477	24,240	——
November	22,919	21,494	20,194	18,724	——
December	16,855	16,517	17,669	18,821	19,727
1929					
January	21,953	23,016	23,547	24,423	——
February	25,389	25,413	24,757	25,005	——
March	25,441	25,920	26,442	27,656	28,077
April	28,934	30,446	30,503	31,213	
May	31,580	31,127			

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1927	1928	1929	End of	1927	1928	1929
Jan.	25,440	25,868	29,617	July	22,558	18,663	——
Feb.	26,766	22,867	32,373	Aug.	25,764	18,971	——
Mar.	27,844	20,538	29,437	Sept.	25,178	14,898	——
Apr.	24,543	16,946	——	Oct.	25,790	12,149	——
May	25,133	17,437	——	Nov.	28,369	29,188	——
June	21,898	18,207	——	Dec.	25,798	32,895	——

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1926	24,199,524	78.8
1924	21,863,311	19.7	1927	19,700,003	79.1
1925	26,001,664	66.8	1928	24,247,282	81.6
1928			1929		
July	2,209,692	85.9	January	1,835,207	79.4
August	2,318,898	80.2	February	2,265,024	80.8
September	2,315,604	76.9	March	2,613,389	80.4
October	2,114,611	72.2	April	2,729,899	81.3
November	1,213,245	66.4	May		
December	1,101,193	74.7	June		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1925	1926	1927	1928	1929
January	14,386,000	17,582,000	17,888,000	20,938,000	22,602,000
February	13,210,000	15,814,000	18,240,000	21,136,000	22,776,000
March	14,890,000	19,302,000	22,464,000	24,041,000	28,495,000
April	19,013,000	20,848,000	23,871,000	25,712,000	
May	20,459,000	24,213,000	26,579,000	27,355,000	
June	20,724,000	23,803,000	27,799,000	29,022,000	
July	22,879,000	24,752,000	29,784,000	30,960,000	
August	22,323,000	26,912,000	29,779,000	33,148,000	
September	20,177,000	22,929,000	28,409,000	29,691,000	
October	19,826,000	23,978,000	25,497,000	30,610,000	
November	18,024,000	20,618,000	24,400,000	26,222,000	
December	17,954,000	21,419,000	23,718,000	26,644,000	
TOTAL	223,865,000	262,165,000	297,928,000	327,932,000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928
Production	40,932	45,259	51,633	60,845	61,237	64,439	77,944
Shipments	39,987	45,204	50,120	59,262	59,002	64,059	74,296
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264	13,624

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	4,965	5,358	6,722	4,932	5,394	6,626	10,432	9,949	13,712
Feb.	5,095	6,363	6,912	4,458	5,031	5,282	11,075	11,721	15,495
Mar.	6,276	6,819	7,519	5,701	5,731	6,708	11,583	12,389	16,351
Apr	6,299	6,178		5,701	5,812		12,122	12,717	
May	6,151	6,759		5,657	6,457		12,462	13,024	
June	6,202	6,692		6,253	7,117		12,462	12,162	
July	5,087	6,498		5,973	7,895		11,326	11,157	
Aug.	5,752	7,469		6,393	8,403		10,721	10,034	
Sept.	4,822	6,802		5,717	7,145		9,722	9,765	
Oct.	4,773	7,326		4,799	5,717		9,665	11,520	
Nov.	4,502	6,075		4,306	4,998		10,136	12,579	
Dec.	4,497	5,605		4,165	4,591		10,264	13,624	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928
Production	50,850	60,116	70,706	82,614	76,618	70,823	80,180
Shipments	49,673	59,072	68,016	81,004	71,591	72,896	77,127
Inventory[2]	7,643	8,425	11,052	11,313	16,200	13,692	16,117

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	5,337	5,441	6,517	6,016	6,072	7,242	15,585	12,962	15,886
Feb.	5,658	6,895	6,769	5,120	5,431	5,278	16,075	14,650	16,999
Mar.	7,184	6,231	7,466	6,157	5,731	6,737	17,096	15,573	17,750
Apr.	7,373	6,661		6,359	5,702		17,801	16,638	
May	6,737	7,168		6,140	6,300		18,389	17,702	
June	6,306	6,953		6,832	7,136		17,858	17,159	
July	5,284	6,674		7,070	8,729		16,004	14,974	
Aug.	6,480	8,343		7,983	9,350		14,664	13,931	
Sept.	5,651	7,103		6,758	7,154		13,511	13,543	
Oct.	5,065	6,929		5,024	5,662		13,539	15,285	
Nov.	4,775	5,592		4,723	5,002		13,585	15,743	
Dec.	4,969	5,184		4,712	4,858		13,692	16,117	

(1) Rubber Association of America figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States			Canada			
	Total	Passenger Cars	Trucks	Total	Passenger Cars	Trucks	Grand Total
1922	2,547,208	2,302,923	244,285	102,053	94,904	7,149	2,649,261
1923	4,020,255	3,631,728	388,527	146,438	129,228	17,210	4,166,693
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,092	164,483	40,609	4,503,891
1927							
July	268,474	236,866	31,608	10,987	8,719	2,268	279,461
Aug.	308,807	274,378	34,429	12,526	10,139	2,387	321,333
Sept.	260,420	226,440	33,980	11,262	8,681	2,581	271,682
Oct.	219,712	183,041	36,671	7,791	6,236	1,555	227,503
Nov.	134,381	109,742	24,639	6,617	5,173	1,444	140,998
Dec.	133,178	105,784	27,394	3,435	2,277	1,158	136,613
TOTAL	3,393,887	2,938,868	453,019	179,426	146,870	32,556	3,573,313
1928							
Jan.	225,039	199,032	26,007	8,463	6,705	1,758	282,502
Feb.	323,368	290,830	32,358	12,504	10,315	2,189	335,872
March	412,825	371,408	41,417	9,724	7,478	2,246	422,549
April	409,948	364,877	45,071	24,240	20,546	3,694	434,188
May	425,990	375,798	50,192	33,942	29,764	4,178	459,932
June	396,967	356,439	40,528	28,399	25,341	3,058	425,366
July	390,445	237,933	52,512	25,226	20,122	5,104	415,671
Aug.	458,429	400,689	57,740	31,245	24,274	6,971	489,674
Sept.	413,722	358,872	54,850	21,193	16,572	4,621	434,915
Oct.	397,096	339,976	57,120	18,536	13,016	5,520	415,632
Nov.	256,936	217,256	39,680	11,769	8,154	3,615	268,705
Dec.	233,135	205,144	27,991	9,425	6,734	2,691	242,560
TOTAL	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929							
Jan.	402,154	350,617	51,537	21,501	17,164	4,337	423,655
Feb.	466,084	407,589	58,495	31,287	28,486	2,801	497,371
March	584,738	513,266	69,559	40,621	32,833	7,788	625,354
April	620,656	538,679	81,977	41,901	34,392	7,509	662,557
May							
June							

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[3]						
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[2]	Sarawak[4]	British North Borneo[5]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[4]	Amazon Valley	All Other[6]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,523
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,505	4,813	58,348	82,511	121,770	9,548	21,129	10,590	653,601
1927:															
Apr.	29,041	13,069	15,972	3,349	723	984	452	526	4,566	5,531	10,197	557	2,451	1,520	46,928
May	31,398	15,491	15,902	3,124	760	786	415	348	5,430	5,529	13,410	586	2,460	1,207	49,957
June	32,607	14,706	17,901	3,348	856	1,100	589	409	4,818	5,518	9,109	772	889	1,731	46,990
July	23,947	12,697	11,250	4,018	827	859	544	333	4,771	6,142	11,566	519	1,757	1,113	43,699
Aug.	30,371	17,105	13,266	5,357	688	1,133	623	546	4,355	6,682	12,440	716	1,928	969	48,703
Sept.	29,335	12,095	17,740	4,911	479	645	566	498	3,635	5,957	9,853	497	2,072	1,213	48,066
Oct.	29,846	15,801	14,045	5,245	802	721	591	542	5,810	7,755	13,633	775	2,752	939	51,520
Nov.	28,277	19,860	8,417	4,464	1,277	1,241	591	600	4,127	6,587	14,395	683	2,369	1,627	46,378
Dec.	32,185	17,965	14,220	4,130	1,395	946	592	664	5,763	7,878	13,438	1,191	3,340	1,444	55,101
1928:															
Jan.	27,789	16,618	11,171	3,830	1,605	842	581	525	4,851	7,988	11,774	1,100	2,273	1,025	47,565
Feb.	28,848	12,911	15,937	4,947	1,081	667	581	536	4,052	6,757	8,630	787	1,612	1,276	46,860
Mar.	27,879	10,508	17,371	3,683	775	645	581	269	3,999	5,825	9,690	700	2,750	1,211	47,499
Apr.	20,139	9,335	10,804	3,233	789	630	494	258	3,993	5,040	5,499	736	1,014	1,323	33,810
May	26,483	10,350	16,133	3,091	654	842	494	241	4,943	5,355	10,347	717	2,602	1,135	45,994
June	22,994	16,168	6,826	3,107	963	926	494	451	5,419	5,863	13,655	725	1,399	960	40,788
July	30,481	13,383	17,098	5,129	1,043	905	593	366	5,602	7,566	11,594	698	1,264	873	52,731
Aug.	35,674	15,114	20,560	5,720	398	1,227	593	544	5,668	7,438	11,893	712	1,732	450	56,936
Sept.	29,769	11,239	18,530	4,675	457	938	594	447	4,956	6,536	9,863	969	1,614	494	50,073
Oct.	24,476	12,603	11,873	3,999	864	949	500*	457	5,295	7,474	10,124	513	1,399	732	44,179*
Nov.	68,135	10,436	57,699	8,005	1,048	772	500*	425	4,950	7,902	7,805	943	1,790	623	92,462*
Dec.	66,763	11,122	55,641	7,848	1,113	744	500*	294	5,120	8,792	10,896	948	2,220	588	94,704*
1929:															
Jan.	52,546	13,415	39,131	8,301	1,664	873	500*	461	5,640	8,067	11,076	395	2,134		
Feb.	47,926	12,103	35,823	6,943	1,117	955	500*	495	6,572	7,511	10,384	965	2,104		
Mar.	49,448	14,553	34,895	6,713		758	500*	499	5,515	6,620	10,629	741	2,332		
Apr.	49,816	11,414	38,402	4,676		747	500*	306				568	1,950		

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, and 2,439 in 1927. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons in 1926, and about ½ ton in 1927. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I" are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, and 84 tons in 1927. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States*	United Kingdom	France (b)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (ed)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,585	5,584	6,395	9,758	9,894	75	1,002	3,995	2,771	3,149	2,418	9	342,378
1920	248,762	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	370,641
1921	179,678	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	-3,807	1,778	589	567	395,885
1923	300,372	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	-11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	-807	3,178	944	1,370	414,847
1925	381,815	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	516,493
1926	395,667	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	613,649
1927	398,483	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	627,789
1928	404,496	4,846	36,498	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	596,695
1927:															
March	32,752	9,049	2,050	3,475	3,760	1,578	852	784	780	454	86	385	137	127	56,269
April	44,627	7,875	2,310	2,393	1,509	2,181	761	1,972	762	448	58	230	177	218	65,541
May	33,736	2,896	2,006	3,380	2,519	1,084	918	887	694	626	-57	335	155	223	49,402
June	31,270	2,282	2,387	3,632	2,086	798	942	1,506	557	583	-17	243	164	183	46,616
July	35,719	1,116	2,334	2,899	2,104	1,505	1,007	415	900	429	66	227	177	236	49,184
August	31,001	3,463	2,795	3,119	2,013	1,970	1,274	386	650	604	-63	312	138	123	47,785
September	29,801	7,800	1,956	2,891	1,850	2,025	684	518	772	552	-33	451	155	272	49,694
October	27,671	5,888	3,479	4,202	1,790	1,966	1,021	1,075	908	465	156	401	153	363	49,538
November	36,123	1,687	3,661	4,209	1,916	1,575	1,167	1,312	836	749	298	474	246	317	54,570
December	28,082	309	4,696	3,109	2,302	2,710	1,462	1,453	1,242	784	-202	514	268	300	47,028
1928:															
Jan.	37,120	1,921	1,764	2,485	2,290	1,361	760	755	802	589	52	261	335	376	50,371
Feb.	30,926	3,143	2,526	2,984	2,553	1,248	437	783	616	599	98	307	296	297	46,813
Mar.	36,893	3,179	1,902	3,521	2,989	1,694	763	231	918	816	95	351	497	898	54,247
April	35,663	—2,280	2,204	2,719	1,938	2,334	1,114	1,320	832	575	280	339	304	159	48,001
May	28,660	—5,322	3,297	2,944	2,180	2,288	1,090	3,893	655	748	209	485	220	213	41,558
June	25,143	—3,031	3,597	2,968	2,186	2,102	984	4,111	348	743	133	346	251	182	40,063
July	28,170	—1,374	3,518	3,387	2,692	2,026	1,598	724	591	895	395	294	175	384	43,475
Aug.	28,827	*48	3,527	2,744	2,447	1,868	875	632	707	519	316	359	58	94	43,021
Sept.	36,800	4,199	3,524	3,553	2,812	1,837	1,278	20	603	597	345	377	277	235	56,457
Oct.	41,667	—934	3,728	4,386	2,943	3,711	1,049	98	766	696	141	527	250	318	59,346
Nov.	33,846	—3,141	3,278	3,694	2,799	2,150	1,340	689	837	544	31	337	252	282	46,938
Dec.	40,781	8,438	3,633	2,470	2,618	3,002	1,145	1,378	755	639	148	455	263	200	65,905
1929:															
Jan.	53,922	11,951	5,645	4,711	3,759	3,776	1,481	984	1,061	749	218		179	525	
Feb.	61,331	5,179	5,001	4,613	2,908	2,727	1,259		1,131	627	113		115	856	
Mar.	46,391	9,068		4,586	4,961		1,515		725		316				

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. *United States imports of guayule are not included in this compilation; such imports amounted to 4,305 tons in 1926; to 5,010 tons in 1927; and to 3,076 in 1928.

Domestic Production of Miscellaneous Rubber Goods

	Rubber Proofed Fabrics Yards	Rubber Heels Pairs	Rubber Soles Pairs	Mechanical Goods Shipments Dollars
1924	25,020,000	186,279,000	(1)	$48,615,000
1925	23,988,000	206,970,000	16,211,620(2)	64,877,000
1926	29,328,000	183,312,000	12,253,000	76,789,000
1927	37,872,000	201,014,000	27,160,000	68,625,000
1928	41,179,000	235,170,000	37,645,000	69,114,000
1928:				
January	2,177,000	17,682,000	3,431,000	$5,630,000
February	2,575,000	19,181,000	3,628,000	5,838,000
March	2,853,000	22,583,000	3,747,000	6,675,000
April	2,416,000	18,575,000	2,928,000	5,406,000
May	2,744,000	21,597,000	3,519,000	6,274,000
June	2,953,000	18,763,000	3,321,000	6,126,000
July	3,447,000	17,620,000	3,168,000	5,157,000
August	4,613,000	21,289,000	3,461,000	6,306,000
September	4,966,000	21,451,000	2,725,000	5,393,000
October	5,914,000	21,932,000	2,297,000	5,837,000
November	4,173,000	18,686,000	2,649,000	5,201,000
December	2,848,000	15,811,000	2,771,000	5,271,000
1929:				
January	2,828,000	19,975,000	3,876,000	6,033,000
February		18,979,000	2,869,000	6,135,000

(1) Not available; (2) Last 9 months only.
Source: "Survey of Current of Business of the Department of Commerce."

United States Imports of Guayule Rubber and Related Gums

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Gutta Percha	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	937,038	8,332	2,213,964	2,900	1,068,698
1920	758	345,985	1,064	1,260,043	5,672	2,068,501	3,183	1,520,309
1921	58	26,945	814	1,077,859	1,745	351,893	985	333,564
1922	127	57,040	812	978,765	2,335	403,812	818	281,012
1923	1,155	542,227	700	898,524	4,565	853,308	912	375,167
1924	1,356	536,392	464	568,456	6,165	1,237,100	1,408	463,610
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	1,603	629,284
1926	4,805	2,562,096	354	327,218	7,263	3,127,757	1,445	661,156
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,494	728,172
1928:	3,075	1,755,685	731	430,855	7,552	2,540,059	1,597	777,128
Jan.	432	242,339	27	24,218	588	183,705	150	86,702
Feb.	489	281,295	33	32,165	403	142,621	312	215,085
Mar.	575	365,927	32	26,460	829	388,616	115	57,333
Apr.	512	312,131	47	32,924	592	174,970	68	27,627
May	452	283,414	—	——	679	226,064	100	42,762
June	424	220,081	9	6,799	293	91,152	28	12,374
July	191	100,342	123	46,747	373	113,295	81	27,344
Aug.	—	——	399	165,460	451	126,962	147	60,738
Sept.	—	——	60	38,198	2,028	713,736	125	56,768
Oct.	—	——	121	59,358	429	129,065	239	94,570
Nov.	—	——	59	41,119	472	140,116	88	35,409
Dec.	—	——	88	58,311	522	156,154	145	59,911
1929:								
Jan.	—	——	46	30,374	484	152,260	138	62,950
Feb.	—	——	82	70,209	823	255,594	40	19,806
Mar.	—	——	90	75,444	428	122,026	1	1,140

Reclaimed Rubber in the United States

(All Quantities in Long Tons—100% Basis)

Year	Production	Consumption Tons	% to Crude	Stocks*	Year	Production	Consumption Tons	% to Crude	Stocks*
1919	81,366	73,535	36.3	.....	1924	80,079	76,072	22.4	.....
1920	86,395	75,297	38.4	.....	1925	132,930	137,105	35.6	13,203
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,834	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....	1928	208,516	200,200	45.4	24,785
1927:									
Jan.	16,526	12,374	39.3	25,903	July	15,488	13,842	47.4	26,599
Feb.	15,860	14,424	47.8	27,291	Aug.	15,109	15,836	47.3	25,157
Mar.	16,788	13,528	37.4	27,124	Sept.	14,392	14,790	54.3	23,429
Apr.	14,483	16,677	46.5	25,712	Oct.	16,127	17,292	64.5	22,176
May	16,159	15,754	46.1	26,419	Nov.	15,477	14,876	55.5	21,728
June	16,652	15,547	46.0	25,811	Dec.	16,083	13,431	52.7	24,980
1928:									
Jan.	14,862	18,134	52.7	21,941	July	17,278	17,173	45.9	17,305
Feb.	15,291	16,808	49.9	20,848	Aug.	19,049	15,532	36.2	15,881
Mar.	17,069	18,619	52.2	19,558	Sept.	18,693	16,022	40.2	17,991
Apr.	15,393	17,355	52.9	19,283	Oct.	17,182	16,587	41.7	17,026
May	18,945	18,201	48.8	19,137	Nov.	18,245	16,547	44.2	22,899
June	18,781	16,328	43.4	18,709	Dec.	17,728	12,894	41.3	24,785
1929:									
Jan.	18,685	19,453	45.3	24,894	July				
Feb.	18,094	17,846	42.9	23,305	Aug.				
Mar.	19,984	18,782	41.9	22,076	Sept.				
Apr.					Oct.				
May					Nov.				
June					Dec.				

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927.

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